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INDEX

VOL. 64, NO. 26 PAGES 401-412

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Eye for Battle

See Page 403

A SCIENCE SERVICE PUBLICATION

MEDICINE

Cigarettes and Cancer

Primary argument linking cigarette smoking to cancer comes from statistics showing an increase in lung cancer at the same time cigarette consumption has increased markedly.

► **BURNING BESIDE** the glowing tips of some billion cigarettes today is the hotly debated question, Does cigarette smoking cause lung cancer?

Tobacco company stocks dropped sharply after the medical reports early this month charging that it does. Whether and how much cigarette sales are off will not be known exactly until after the end of the year when records for the final quarter are available.

Tobacco company experts today are said to be more annoyed than scared, and to be readying answers to the medical charges.

When the worried smoker, however, asks his doctor what about it, the chances are he will be told to cut down on his smoking if he has been smoking heavily. Some doctors will advise stopping altogether, others may advise moderation, as most have in the past.

In the present state of knowledge, no one can guarantee that a person who quits smoking, or who has never smoked, will not get lung cancer. It can be said, however, that a person who has his chest X-rayed regularly has a good chance for early discovery of lung cancer if he develops one, and that an operation, especially in the early stages, to remove the cancer and the lung if necessary, has a good chance for success.

Primary argument linking cigarettes with lung cancer comes from statistics showing an increase in lung cancer has come during the same period that cigarette consumption has increased markedly. Backing this are statistics showing that, in cases of cancer of the lung, there is almost always a history of excessive smoking for a period of at least 20 years, and that it is rare to find lung cancer in a non-smoker.

However, a Yale professor, who is director of statistical research for the American Cancer Society, E. Cuyler Hammond, says there is still no reliable statistical evidence to prove that cigarette smoking causes cancer. Referring to previous studies, he said that "certain investigators, including myself, are not completely convinced as to the validity of the results, in spite of the fact that a number of independent studies conducted in more or less the same way led to more or less the same apparent conclusions."

Right now Prof. Hammond is directing a study of the smoking habits of 204,000 men. This study for the American Cancer Society is reversing the usual direction of such studies. It is designed to learn the smoking habits of men while they are alive and compare these with the causes of their deaths

when they die. In the past, the comparison has been of smoking habits of patients with lung cancer and those without it. This has the weakness that until a person develops lung cancer or until he dies, no one can say he is not a lung cancer patient or going to become one.

Some of the arguments linking cigarette smoking to lung cancer come from laboratory experiments with mice. Cigarette smoke tar painted on the skin of mice over about a period of a year will produce cancer in these animals. An answer to that could be found from laboratory experiments in which other tars painted on mouse skin produced cancers.

Cigarette smoke tar is not the only possible cancer-causing product of combustion to which men and women have been increasingly exposed in the past quarter century. Fumes and gases that pollute city air on a smoggy day can do more than smart the eyes. They can, in the opinion of more than one scientist, take a good share of the blame for the increase in lung cancer. Chemicals from these fumes, when painted on mouse skin, will also produce cancers.

More convincing, perhaps, than the skin-painting experiments are some reported about a year ago and also earlier. In the latest ones, mice were housed in a special cage with a specially designed automatic smoking machine. While the animals did not actually smoke cigarettes, they came as close to it as scientists could contrive. At least they breathed cigarette smoke from cigarettes smoked by the machine at the rate of one an hour for a 12-hour day.

Half a lifetime of this increased the chances of getting lung cancer by about one-third—that is, for mice with a hereditary tendency to lung cancer. Similar experiments run in 1943, but for a shorter time in mouse life, showed no difference in lung cancers between mice who "smoked" and those that did not. Maybe this means the smokers who quit have a better chance of escaping lung cancer than those who continue the habit.

Glandular activity that drives men and women to chain smoke may be a factor in causing lung cancer rather than the tobacco itself. This idea was advanced last year by a professor of surgery who has seen and operated on many lung cancer patients. He pointed out that there are numerous authenticated cases of lung cancer in persons who never used tobacco in any form.

Arsenic, sprayed on tobacco plants to destroy crop-eating insects, has also been blamed for the cigarette-lung cancer situation. If true, the remedy would be simple.

If cigarette smoking is related to lung cancer, it will be important to know the degree of the relationship, Prof. Hammond has pointed out. To use such a finding to save lives, either people must be persuaded to give up smoking or the harmful ingredients must be discovered and removed from cigarettes. Unless the relationship between lung cancer and smoking is large, neither is apt, in his opinion, to be accomplished.

Science News Letter, December 26, 1953

MEDICINE

Restore Brain Chemical Process in MS Patients

► **A CHEMICAL** that tends to restore normal brain and nervous tissue chemistry in multiple sclerosis patients has been discovered by Drs. John E. Adams and Gilbert S. Gordan of the University of California School of Medicine, San Francisco.

The National Multiple Sclerosis Society in New York, which supported their work, calls the discovery "significant in that it may lead to the cause and possible treatment" of this central nervous system disease that afflicts an estimated quarter of a million persons in the United States alone.

The chemical whose effect was discovered by the California scientists is called a succinate. They came to its discovery through a study of the way the brain tissue of MS patients handles another chemical, glutamic acid.

In 12 of 15 normal persons, amidation of glutamic acid was carried on by the brain tissue, they found. This, it is believed, represents a mechanism for removal of ammonia within the brain cells. Removal of the ammonia is a necessary factor to avoid poisoning in the nervous tissue.

In eight out of nine MS patients, however, the amidation of glutamic acid was not carried on. But injections of succinate into the veins of the patients restored the amidation pattern toward normal.

Science News Letter, December 26, 1953

DERMATOLOGY

Procaine Gives Relief To "Chronic Itcher"

► **THE "CHRONIC itcher"** who has not been helped by other recognized forms of treatment can sometimes be relieved of his misery by doses of procaine, Dr. Samuel R. Perrin of the Western Pennsylvania Hospital, Pittsburgh, reported at the meeting of the American Academy of Dermatology and Syphilology in Chicago.

Procaine is known chiefly as a local anesthetic. For relief of itching it can be taken by mouth, can be injected into veins or can be put right on the itching skin in a solution called efocaine.

In some of the more acute itchy conditions, Dr. Perrin said, the period of discomfort can be hurried over by procaine.

Science News Letter, December 26, 1953

METEOR

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METEOROLOGY

**More Support Urged
For Weather Service**

► **ADMINISTRATION REORGANIZATION** ideas for government bureaus and departments can be cheered by at least one of them—the U. S. Weather Bureau. This appears from the report of the Department of Commerce Advisory Committee on Weather Services to Secretary of Commerce Sinclair Weeks.

A bigger budget, an aggressive research program, return of certain research, climatological and observing functions from the Armed Forces to the Weather Bureau, and the addition of more forecasters are among the committee's recommendations.

Decentralization, encouragement of state and local governments to take part in some programs and encouragement of private meteorology are other recommendations.

High praise for the Bureau's present chief, Dr. Francis W. Reichelderfer, and for the "frugality" of its operations is given.

"We know of no other governmental agency that has been so economical in the expenditure of its funds," the committee declares.

Per capita cost of U. S. Weather Bureau services is, roughly, 18 cents, compared to 20 cents in England, 47 cents in the USSR and 50 cents in Canada.

The committee was composed of eight non-governmental meteorologists under the chairmanship of Joseph J. George of Atlanta, Ga.

The Weather Bureau needs more funds for such projects as a national radar storm detection network and electronic computers in forecasting, the committee said.

Science News Letter, December 26, 1953

ARCHAEOLOGY

**Colored Flint Further
Pitdown Fraud Evidence**

► **MORE EVIDENCE** has been produced that the Pitdown Man discovery was in part a deliberate fraud foisted upon science.

Drs. K. P. Oakley and J. S. Weiner, British scientists, reported previously that the jawbone was that of a modern ape stained with chromate to make it appear ancient. Now they find that one of the so-called flint implements similarly was stained with chromate, although other flints also supposedly recovered from the earth layer just above the fossil skull were stained only with iron, as they would be by weathering.

This flint must have been "treated in that way by a forger requiring it to be of a certain color," the scientists report in *Nature* (Dec. 12).

When the stain was removed by acid, this flint was indistinguishable from a mechanically broken piece of flint such as can be found in any plowed field in the southern England area where Pitdown Man was unearthed in 1912.

Science News Letter, December 26, 1953



TRAINING BY TV—A member of the Signal Corps mobile television section gives a brief description of an airborne loading operation being telecast by the unit as part of a class instruction program.

MILITARY STRATEGY

TV As Battlefield Aid**See Front Cover**

► **THE ARMY** Signal Corps is experimenting with television as a weapon of warfare to save lives, time and money in future conflicts.

Battle commanders may be able to switch tactics almost instantly when the occasion demands it if they can watch on video screens the progress of their strategy at the front 10 miles away.

This would give the U. S. an advantage, especially if the enemy depends upon the usual verbal reports from the front—reports that often are conflicting and inaccurate, the Army points out.

Although television offers promise as a tactical tool, emphasis in experiments now under way at the Signal Corps' Pictorial Center, Long Island, N. Y., is being placed upon television's value as a training aid.

Through the video medium, the Army can instruct larger classes than it can accommodate in present auditoriums with good results. For instance, a one-hour lecture was delivered from a laboratory containing the radio equipment under study. It would have been difficult to squeeze all the soldiers into the small lab.

By watching a televised version of the lecture, each man was able to hear the instructor and see the small radio dials and

knobs almost as clearly as if he were standing next to the electronic gear.

Complex field problems can be explained to military students through the eyes of TV cameras. By way of a closed-circuit telecast, which could not be picked up on home receivers, a group of West Point cadets watched an amphibious assault exercise off the Sandy Hook, N. J., coast.

The TV cameras in this case were carried aloft in L-20 liaison airplanes flying 3,000 feet above the beach. The picture was broadcast to the Signal Corps mobile station at Camp Wood 10 miles away. There it was "distributed" to 10 television receivers being viewed by the visiting West Pointers.

Shown on the front cover of this week's *SCIENCE NEWS LETTER* is such experimental television camera mounted in an L-20. The camera has a special lens mount to resist high winds. Before take-off, the pilot and cameraman check the problem to be televised in regard to terrain, flying hazards and safety restrictions. During the flight, an intercommunication system is used to maintain contact between the pilot and cameraman.

Army video also offers promise as a technical tool. It is able to monitor areas contaminated with radioactivity that would present a hazard to human life.

Science News Letter, December 26, 1953

SURGERY

Separated Siamese Twins

Doctors report successful separation of Siamese twin girls who have now passed their first birthday, marking the first known time both members survived so long after separation.

► A ONE-YEAR-OLD birthday celebrated on Dec. 14 by twin girls in Cleveland was a record-breaking event in medical history as well as in the lives of the baby girls, their parents and doctors.

For these girls were born as Siamese twins. They were separated surgically shortly after birth. And today both are alive and well, thus setting a medical record. Theirs is the first case, so far as is known, of both members of a pair of Siamese twins surviving this long after a separation operation.

Healthy, gaining nicely and "just fine," in the words of one of their doctors, the babies show every sign of continuing to live. A scar extending about an inch and a half down from the level of the breast bone on each baby is all that shows they once were joined.

The story of their birth and separation is reported in the *Journal of the American Medical Association* (Dec. 12) by Drs. Hyatt Reitman, Earl E. Smith and Jac S. Geller, obstetrician, pediatrician and surgeon, of Mount Sinai Hospital, Cleveland.

These separated Siamese twins are completely anonymous. Their names have not appeared in the public press and the medical report does not even give their mother's initials. She is identified only as "a 27-year-old woman" and the babies are called "twin A" and "twin B" in the journal.

Three months before the babies' arrival, Dr. Reitman recognized that their mother was going to have twins. But it was not known that they would be Siamese twins until they were born. Dr. Smith, who examined them shortly after birth, found them completely normal except for the band of flesh connecting them and for a heart murmur in one twin. Simultaneous electrocardiograms taken by Dr. Bernard Brofman showed normal heart rates and rhythms which were not synchronous. This was a sign that the babies had separate blood circulation systems.

The babies were given vitamin K to forestall undue bleeding, penicillin and streptomycin to check any infection, and taken to the operating room where Dr. Geller cut away the band of tissue connecting them.

The separated twins were put in an incubator and given oxygen continuously for six hours after the operation. After two weeks they were doing so well they could be taken home.

Fortunately, these babies did not have any organs or large blood vessels in common and the band connecting them was made up only of flesh and some cartilage from the breast bones.

The original Siamese twins, Eng and

Chang, were joined in much the same way as the year-old Cleveland babies. Examination of their bodies after their deaths showed that the band that connected them was composed mainly of muscle, but, unlike the Cleveland twins, this band did contain a small band of liver tissue, showing that there was some slight sharing of internal organs. Medical authorities have said, however, that it would have been possible to separate Eng and Chang surgically, even in their day over a century ago, before the development of modern aseptic surgery, antibiotics, blood transfusions and modern anesthetics.

The Mouton Siamese twins, also girls, have both survived a separation operation performed in New Orleans. This was just three months ago, however, so they cannot yet be said to have reached the one-year survival record of the Cleveland babies. The Mouton twins were joined at the base of the spine.

A history making operation in Chicago separated the Brodie twins, joined head to head, a year ago, but only one of these boys, Rodney, survived. The other twin, Roger, died a few weeks after the operation.

Successful surgical separation of Siamese twins has apparently been done only three or four times previously. One authority reports three authentic cases with survival of one twin and death of the other. According to another authority, there have been four cases, in one of which both twins survived for six months.

A famous case at the beginning of this century was that of the "Radica-Doodica" Hindu sisters who toured with Barnum and Bailey's circus. At the age of 12, Doodica became critically sick with tuberculosis and a separation was performed to save her twin. Doodica died shortly after the operation but Radica was reported restored to complete health.

Dr. Reitman, who delivered the Cleveland babies, thinks that he and his colleagues may hear of other, so far unreported, successful separation operations after other doctors have read their report.

Science News Letter, December 26, 1953

MEDICINE

Medical Research Grants Follow Modern Practice

► COMMONWEALTH FUND grants for medical research are following the modern trend in medical practice and education of seeing the patient as a whole, rather than as a case of heart disease or diabetes or

kidney disease, it appears from the 1953 Annual Report.

Sickness, it is believed, can seldom be laid to a single cause. More often it results from the interaction of many aspects of a person's environment, both external and internal. So first priority in the Commonwealth Fund's medical research grants goes to studies primarily concerned with the interaction between the organism and its environment, such as studies of growth and personality, certain types of neuropsychiatric research, and studies of relationships between social environment and chronic disease.

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MEDICINE

Two-Headed Babies

One case prior to the Indiana baby is known of a human with two heads surviving. These fused twins, born in 1937 in Russia, lived for over a year and began to "goo-goo."

► AT LEAST one case of survival for a year of a human baby born with two heads, like the one in Indiana, is known to medical science. That "rare being," like the Indiana one, had two heads and four arms. It also had four shoulders and was fused from there down into one body.

These fused, or coalescent, twins were born in a maternity hospital in Moscow, USSR, in 1937. The two-headed baby girl was extensively studied at the All-Union Institute of Experimental Medicine there. The babies, named Ira and Galya, were one year, 22 days old when they died.

Scientists observed that at an early age they stared fixedly at each other and, evidently to get better acquainted, one would reach out to feel the face of the other. If the touch involved scratching with sharp finger-nails, as it sometimes did, a loud cry of pain resounded throughout the ward, first from the scratched twin, then from the scratcher. But then in a minute the wrangle ended and the sisters sucked their fingers peacefully.

After a time such conflicts became rare and the sisters seemed to have reached an understanding. Soviet scientists believed that, since the sisters shared a common chest, crying by one was most unpleasant for the other. Each girl, perhaps through a conditioned reflex as the Soviet scientists theorized, learned to restrain all movements that caused her discomfort even though it would come through her sister.

Before the end of their short lives, the babies were able to hold up their heads well and to wave their tiny hands and hold toys firmly.

Because of the small size of their legs, their doctors did not think they would ever walk, though prolonged special training for walking had been planned for them at an older age.

Shortly before they died at the age of one year, they began to utter sounds comparable to the "goo-goo" of a six-month-old infant. This showed that their speech function was very much retarded, although the development of their nervous reactions suggested that they would have talked if they had lived longer.

The character of their nervous activity was distinctly individualized and they had "temperament." Ira was vociferous, energetic and strong, while Galya was a great deal quieter, somewhat dull and feeble. She rarely smiled and cried a good deal.

The Soviet scientists apparently had not thought of trying to separate the babies. They were given great care and were ob-

served, but not experimented on, the object being to learn as much as possible about the physiology of sleep, appetite, pain and certain diseases without risking the health or comfort of the twins.

In spite of "trials and tribulations," a frail constitution and many ailments, the twins gained and a few days before their death, the scientists felt every assurance that they would survive.

In the 15 years since these twins died, medicine and surgery have made great strides which may give the Indiana boy fused twins a better chance for the future.

A two-headed baby girl born in England in 1946 lived only 50 hours. In that short time, doctors found the two heads breathed independently and had different pulse rates, indicating two sets of lungs. Because the two heads fed separately, the doctors believed this being had two stomachs.

Another two-headed baby, with a third arm on the midline of its body, and two hearts and two stomachs, was reported from Detroit in 1930. This baby died at birth.

Cats with two heads and seven legs, calves with two heads, calves and deer with two hind ends, a big two-headed trout,

two-headed turtles and snakes, double or triple chick embryos on one yolk and two-headed or four-legged chickens have also been reported.

All these double monsters, as well as identical twins, originate from one single egg. In most cases what happens is that the single egg forms two separate centers of organization in close proximity to each other. But when these begin to expand and differentiate, they fuse instead of continuing as separately organized individuals, such as identical twins.

Fused twins may be loosely conjoined, as Siamese twins, or they may be joined in many odd ways, it appears from medical reports. One of these odd fusions gave a monster four legs and four arms but a fused chest and two heads fused so that each face was made up of two halves. One half belonged to one trunk and the other half face to the other trunk.

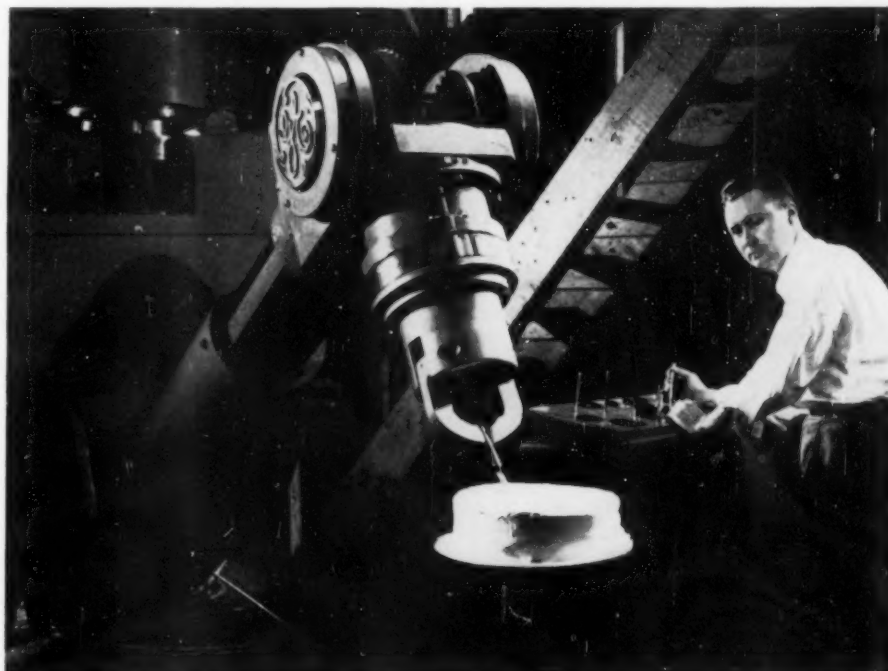
Science News Letter, December 26, 1953

TECHNOLOGY

Robot Arm Can Make Cake

► A 15-TON mechanical arm that can make cakes, tie iron bars into knots and pour glasses of water has been created to perform Herculean tasks where men could not survive.

Despite its culinary prowess, the crane-mounted O-Man, will draw upon its mighty strength in the General Electric laboratory at Schenectady, N. Y., where nuclear aircraft engines are under study for the Air



JUST A SMALL PIECE, PLEASE—This is the mighty-muscled O-Man, the newest mechanical arm designed to handle radioactive materials in areas dangerous to man. It is sensitive enough to slice this cake.

Force and Atomic Energy Commission. O-Man, the big arm's name, is derived from "overhead manipulator."

With its two steel fingers, the record-sized machine can pick up heavy parts, position them and fasten them into place. It can drill and tap holes, use power wrenches, hammers or riveters, and operate a sheet metal saw. Messages are dispatched to the arm through 140 wires running to a remote "brain" situated where human arms are safe from radioactive burns.

Science News Letter, December 26, 1953

• RADIO

Saturday, Jan. 2, 1954, 3:15-3:30 p.m. EST
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. George Wald, professor of biology at Harvard University and winner of the 1953 Lasker Award of the American Public Health Association, will discuss "How We See."

HEMATOLOGY

New Blood Factor U Widely Distributed

► DISCOVERY OF a new blood factor, called "U" because of its almost universal distribution, was announced by Dr. A. S. Wiener, Dr. L. J. Unger and E. B. Gordon of the Serological Laboratory of the Office of the Chief Medical Examiner of New York and the blood and plasma bank, University Hospital (New York University-Bellevue Medical Center), New York, in the *Journal of the American Medical Association* (Dec. 19).

The new factor was discovered after a Negro woman, taken to a hospital with a bleeding stomach ulcer, went into shock and died from reaction to blood being given her by transfusion. A previous transfusion given her had had to be stopped because of a reaction of chills and fever. Both donors, however, had belonged to the same blood group, B, as the patient.

After she died, her blood was again examined. Cross-matching tests showed that her blood contained an abnormal antibody that strongly clumped the cells of the two donors. Subsequent tests with blood of 425 Negroes and 690 white persons showed the U factor present in all but four of the Negroes.

The U factor, the scientists report, is not related to the A-B-O, M-N, Rh-Hr or K-k systems, or to any other blood factor discovered to date.

Blood grouping has become a highly specialized field, the scientists point out. In their opinion, the delicate tests needed can only be performed by specially trained persons. In order to avoid fatal reactions, they advise against having blood grouping and cross-matching done by interns who usually have very little training. Instead, they think, large hospitals should set up adequate blood grouping departments and small hospitals should make use of a central blood grouping laboratory.

Science News Letter, December 26, 1953

METEOROLOGY

Weather Control Studied

► WHETHER CONGRESS should enact laws to control the weather, if it is economically possible at all to make rain or to disperse fog, is one of the questions an 11-man committee just appointed to study weather modification will probably decide.

Retired Navy Capt. Howard T. Orville, chairman of the President's Committee on Weather Control and Evaluation and a consultant of the Bendix Aviation Corp., Baltimore, outlined the aims of the committee in Washington.

Western ranchers and farmers are spending hundreds of thousands of dollars a year on efforts to make it rain. Although many of them believe this money is well spent, the U. S. Weather Bureau, backed by close to 100 years of records, often can tell them that it would have rained without the rain maker's efforts. Capt. Orville pointed out, however, that an increase of even ten percent in rainfall in the West would "mean a great deal." Many scientists at

present question whether cloud seeding achieves even this. The weather advisory committee, Dr. Orville said, will make a study of "all past, present and future cloud seeding experiments," then try to decide if they have been successful. In their work, the committee will have access to classified information, both of the government and of private operators, since it has the power to subpoena records. Thus it will be able to base its final decision recommending weather control legislation, due in 1956, on more scientific data than has been available to previous groups evaluating the claimed successes of rain making.

Under the terms of the Public Law 256, passed by Congress at its last session, the committee is required to report periodically to Congress, by way of the President. Not only information on cloud seeding collected by U. S. scientists, but results of experiments in such countries as Australia and Spain will be considered by the committee.

Science News Letter, December 26, 1953

BIOPHYSICS

Photosynthesis Method

► GREEN PLANTS may use a photoelectric process for the "crucial step" of converting energy to make sugars and starches for food from carbon dioxide and water.

This new theory, which will appeal to scientists working on the problem because it is both simple and profound, has been developed by Dr. Leonard S. Levitt of Stevens Institute of Technology, Hoboken, N. J.

According to this theory, a chlorophyll molecule, on bombardment with photons of red light, absorbs one quantum. This results in activation of an electron to such a high-energy level that it is easily extracted by a mild oxidizing agent intimately associated with the chlorophyll molecule, that is, the disulfide group of pyruvic oxidase.

The entire process, Dr. Levitt thinks, may be thought of as a flow of electrons actuated by light, or, essentially, as a photoelectric current flowing from water through the chlorophyll to the disulfide.

According to previous theories advanced by other scientists, the chlorophyll molecule transfers its electromagnetic energy to a disulfide ring and, through chemical reaction, two hydrogen atoms are extracted from water or some other substance.

Dr. Levitt thinks it "rather unlikely" that this would go on in a living cell in a water solution or suspension where ions could be formed with much less energy.

In reporting his theory in *Science* (Dec. 4), he states: "The transfer of electrons can occur much more rapidly and efficiently

than the transfer of relatively cumbersome hydrogen atoms, and it is not to be supposed that nature has not yet been apprised of the fact."

According to his theory, many things scientists have been searching for, because they assumed they happen, need not be searched for because they do not happen.

Science News Letter, December 26, 1953

PUBLIC HEALTH

Milk, Living Standards Are Closely Connected

► THERE IS a close connection between a high standard of living in a country and its ability to produce and distribute wholesome milk, Dr. Jacques M. May, head of the department of medical geography, American Geographical Society, declared at the World Congress for Milk Utilization meeting in Washington.

Where milk is unobtainable or prejudices keep people from drinking it, the population is usually near starvation, he said.

In India, the people like milk and the country has the largest number of cattle in the world, but only a quarter of a pint of milk is available per person per day. It is against religion in India to kill cows. Old cows no longer producing milk compete for food with young cows. The result is the cows are as starved as the people.

A contempt for milk is traditional in China, Dr. May said.

Science News Letter, December 26, 1953

ASTRONOMY

Total Moon Eclipse

Five eclipses, three of the sun and two of the moon, are scheduled for 1954. Total eclipse of sun on June 30 will be first visible in any part of United States since 1945.

By JAMES STOKLEY

► A TOTAL eclipse of the moon, on the evening of Monday, Jan. 18, one of five eclipses in 1954, is the chief event on the month's astronomical calendar.

Visible all over the United States, as well as Canada and the rest of North America, it will be at its height at 9:32 p.m. EST (8:32 CST, 7:32 MST or 6:32 PST). A little more than three hours will elapse from the time the moon enters the earth's shadow until it leaves it.

Aside from this, we also have the usual January evening skies, which are always brilliant, although this year the presence of a bright planet makes them even more so. This is Jupiter, high in the south in the constellation of Taurus, the bull.

Its magnitude is minus 2.2 on the astronomical scale, so it exceeds in brightness any star, or any other planet, now visible.

The accompanying maps show the appearance of the heavens about 10:00 p.m., your own kind of standard time, on the first of January; an hour earlier at the middle of the month, and two hours earlier at the end.

Jupiter: Only Planet

They show the location of Jupiter, just to the left of Aldebaran, the first magnitude star in Taurus that marks the animal's eye. Jupiter is the only planet in the evening sky.

Still higher, directly overhead as shown on the maps, we find Capella, in Auriga, the charioteer. To the left of Jupiter, in the constellation of Gemini, the twins, are Castor and Pollux. The latter is the brighter and a star of the first magnitude.

Below Jupiter we come to one of the best known of all the star groups, Orion, the warrior, which is easily recognized by the three stars in a row that form his belt. Above this trio is Betelgeuse and below is Rigel, both of them also stars of the first magnitude.

The brightest of the stars, which are distant suns and, unlike the planets, shine by reflected sunlight, is Sirius, the dog-star. It is in Canis Major, the great dog, below and to the left of Orion. Higher, and farther left, is Canis Minor, the lesser dog, with the bright star Procyon. Going upwards still farther from this group we are again in Gemini.

In addition to the stars mentioned, two others of the first magnitude are also shown on our maps, although their low altitude

causes considerable atmospheric absorption of their light. This is particularly true of Deneb, in Cygnus, the swan, which is just above the northwestern horizon. It is all that remains visible of the northern cross, which shone so prominently in the evening sky a few months ago.

The case is opposite for the other star—Regulus, in Leo, the lion—which is low in the east. In coming months it will become more and more prominent, until on April evenings it will stand where Taurus does now.

January Lunar Eclipse

As for the other planets, Mercury and Venus are about in the same direction as the sun, and can hardly be seen at all. Venus, in fact, passes behind the sun on Jan. 29. Mars and Saturn are both in Libra, the scales, rising several hours before sunrise. Saturn is to the west, and although both now rate with stars of the first magnitude, Saturn is about one and three-quarters times as bright as its brother planet. Mars, of course, is characteristically red in color. Later in the year it will come into much greater prominence as it approaches within a little less than 40,000,000 miles of the earth on July 2.

The total eclipse of the moon on Jan. 18 is one of two eclipses that occur in January, although the first, which is of the sun on Jan. 5, is not of great interest in this part of the world. One must go to Antarctica or New Zealand to see it. But 1954 brings a total of five eclipses, one of them a total eclipse of the sun, the first visible in any part of the United States or Canada since 1945.

Basically, an eclipse occurs when one ob-

ject gets between two others. On Jan. 18 the earth will pass between the sun and moon. Since the source of the moon's light is the sun, its illumination is then largely cut off.

On the other hand, the moon may get between the sun and the earth, and this is what happens on Jan. 5, so the moon's shadow will then reach toward the surface of the earth, in the region around the south pole.

Because the sun is 864,000 miles in diameter, and the moon only 2,160 miles, the lunar shadow tapers to a point, at a distance from the moon of about 230,000 miles. This is the inner shadow, the umbra, where the lunar disk completely hides the sun, and around it is a larger region, the penumbra, where the disk of the sun would only be partially covered.

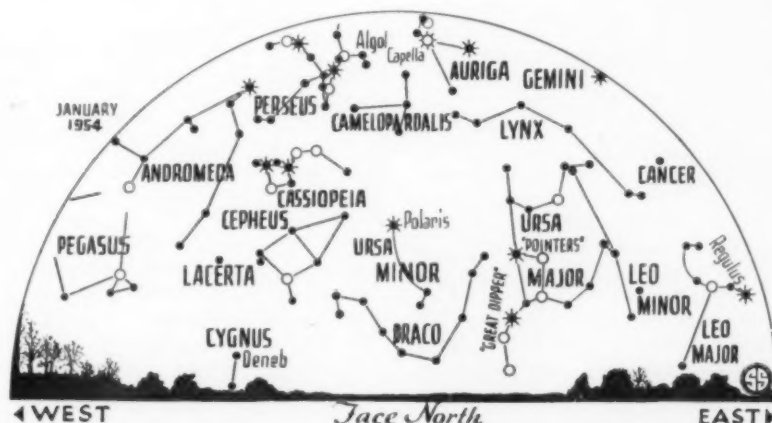
Sometimes the umbra reaches the surface of the earth. However, on Jan. 5 it falls short, so even in the part of the world, Antarctica, toward which the shadow is aimed, the solar disk would not be completely covered. The moon then will be far enough away that it will look a little smaller than the sun.

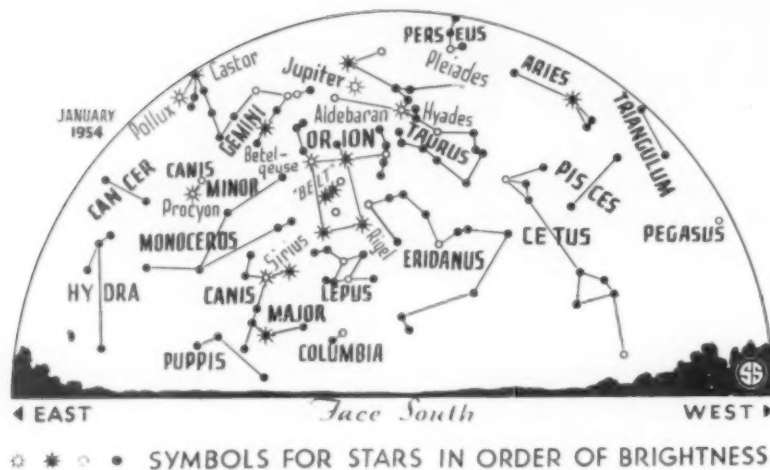
The result is that even though it goes in front of the sun a ring of that body, called the annulus, which is Latin for ring, remains visible around the dark moon. Hence such an eclipse is called "annular."

Totality Path in U. S.

On June 30 the moon again comes between sun and earth, producing the year's second solar eclipse. But this time the tip of the umbra does reach the ground. As it moves along it traces out a strip nearly a hundred miles wide and thousands of miles long—the path of totality—in which the total eclipse is seen.

This path starts in Nebraska as the sun is rising there, then travels northeastward over Iowa, Minnesota (including Minneapolis), Wisconsin and Michigan. After





crossing Lake Superior, it traverses the Canadian provinces of Ontario and Quebec to the coast of Labrador. Thence it goes eastward and southeastward over the Atlantic Ocean, southern Greenland, Iceland, Norway, Sweden, Lithuania, Russia, the Caspian Sea, Iran, Afghanistan, Pakistan, and ends in India as the sun is setting.

Many scientific expeditions will be located along this path to make the many observations that can only be made at such an eclipse. And also many astronomical enthusiasts, not professional astronomers, will gather at points of vantage to see this rare phenomenon, a total eclipse of the sun, which is unquestionably one of the most magnificent spectacles offered by nature.

For those who want to plan such observations, the U. S. Naval Observatory in Washington has issued a 42-page booklet, with tables and maps, entitled "Total Eclipse of the Sun, June 30, 1954," which gives full details as to how it will appear from different parts of the earth. This is obtainable for 40 cents from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Two weeks later, on the evening of July 15, the earth will again come between sun and moon, although the latter body will not enter completely into our shadow. Thus it will be only a partial eclipse; at best only a little more than four-fifths of the lunar diameter will be shaded. This eclipse will be visible in the eastern parts of the United States and Canada.

The year's fifth and last eclipse will come on Christmas day and, like the one which began the 1954 program, it will be of the sun and annular. The path over which the annular eclipse will be visible starts in the south Atlantic Ocean, crosses South Africa and the Indian Ocean, ending in Timor, the large island northwest of Australia. Over a larger area, including most of southern Africa, Australia, Indonesia and the Philippines, as well as part of Antarctica, the sun will be partially eclipsed.

However, it is the total eclipse of the moon on Jan. 18 that is of most immediate interest. The accompanying diagram shows the way the moon passes through the earth's shadow on that evening. North, i.e., the

direction toward the pole star, is at the top. The large circle represents the shadow, and the small circles, I, II, III and IV, successive positions of the moon.

Position I occurs at 7:50 p.m., EST (one hour earlier for CST, two for MST and three for PST). At this time the moon starts to enter the shadow, and its curved edge will be seen gradually creeping over the lunar disk until 9:17 when the eclipse will be total, with the moon completely immersed in the shadow. During this time the moon does not disappear from view, for even in the center of the shadow there is some light, caused by rays from the sun which have been bent by the earth's atmosphere.

Because the blue waves of light are scattered in this passage through the air, thus

giving the daytime sky its blue color, that which passes on through into the shadow is reddened, and the eclipsed moon has a typical coppery red color. In this particular eclipse the moon just gets into the shadow, and does not pass through its center.

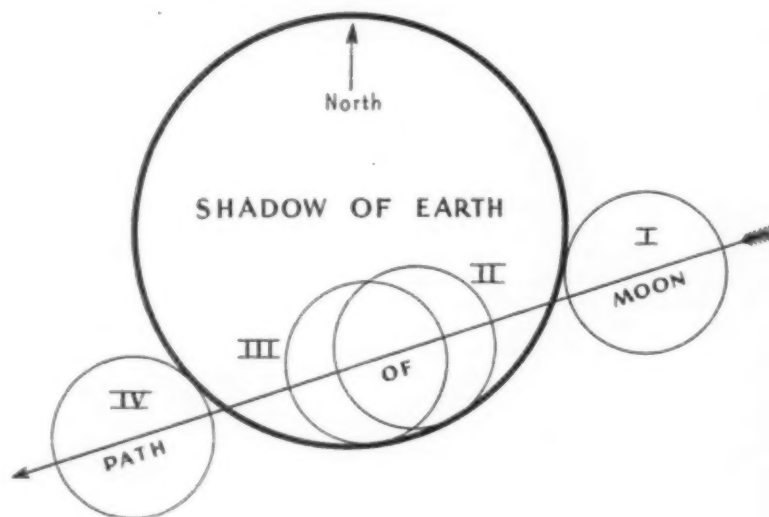
Hence the southern edge of the moon, which is never far from the edge of the shadow, will probably look noticeably brighter than the rest of its surface, even at mid-eclipse, which comes at 9:32 p.m., EST.

At 9:47 p.m. the total phase of the eclipse ends, and once more the curved edge of the shadow will be seen traversing the face of the moon. Finally, at 11:13 p.m., the moon will be out of the shadow and the entire eclipse will be over. However, the moon will still be in the outer part of the shadow, the penumbra, until 12:24 a.m., and during this period an observer on the moon would see the earth partially hiding the sun. But even with part of the sun shining on the moon it still looks so bright that it seems practically normal.

Celestial Time Table for January

Jan.	EST	
2	3:00 a.m.	Earth nearest sun, distance 91,348,000 miles.
	10:55 p.m.	Algol (variable star in Perseus) at minimum brightness.
4	9:21 p.m.	New moon, annular eclipse of sun visible in Antarctica.
5	7:44 p.m.	Algol at minimum.
8	4:34 p.m.	Algol at minimum.
10	5:00 a.m.	Moon nearest, distance 229,800 miles.
11	7:22 p.m.	Moon in first quarter.
15	8:30 p.m.	Moon passes Jupiter.
18	9:37 p.m.	Full moon, total eclipse of moon visible in U. S. and Canada.

TOTAL ECLIPSE of MOON, JAN. 18, 1954



The large circle represents the shadow of the earth, and the small circles, I, II, III and IV, indicate the successive positions of the moon as it passes through the shadow. The four phases shown occur at the following times:

I	7:50 p.m. EST	6:50 p.m. CST	5:50 p.m. MST	4:50 p.m. PST
II	9:17	8:17	7:17	6:17
III	9:47	8:47	7:47	6:47
IV	11:13	10:13	9:13	8:13

- 20 3:51 a.m. Algol at minimum.
 23 12:40 a.m. Algol at minimum.
 25 7:00 a.m. Moon farthest, distance 251,400 miles.
 9:29 p.m. Algol at minimum.
 26 10:28 p.m. Moon in last quarter.
 28 10:03 a.m. Moon passes Mars.
 6:19 p.m. Algol at minimum.
 29 7:00 p.m. Venus behind sun.
 Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, December 26, 1953

MEDICINE

Exchange Resin Makes TB Medicine Easier to Take

► AN ANION exchange resin is coming to the rescue of tuberculosis patients who find PAS, or para-aminosalicylic acid, hard to take.

The PAS is adsorbed on the resin and when the combination is swallowed, the hydrochloric acid in the stomach gradually displaces the PAS. As it passes into the intestine, it is absorbed by the body and carried in the blood just as efficiently as if it had been taken alone.

This new product was announced by its manufacturer, E. R. Squibb and Sons, who have trademarked it Rezipas.

Science News Letter, December 26, 1953

AERONAUTICS

1,650 Miles Per Hour Sets New Speed Record

► VIRTUALLY ON the eve of aviation's golden anniversary, the U. S. again focused world attention upon the skies. Air Force Maj. Charles E. Yeager rocketed to 1,650 miles an hour in the Bell X-1A research plane.

This world speed record of Mach 2.5—which is two and a half times the speed of sound—was chalked up Dec. 12 by the 30-year-old West Virginian.

The Air Force said that Yeager's flight was the "fastest known to have been attained by any aircraft or any human being anywhere in the world."

The rocket plane was powered by one engine rated at 6,000 pounds of thrust. The designed speed of the plane is 1,600 miles an hour, and apparently Maj. Yeager coaxed another 50 mph from the little craft. Its wings measure 28 feet, and its length is 35.5 feet.

Since it has merely a 4.2-minute "range," the X-1A was carried aloft in a B-29 Superfort, then released. The 1,650 mph speed record it subsequently established will not be officially recognized. International rules dictate that all planes trying for new speed records must take off from the ground under their own power.

Maj. Yeager later told newsmen that he expects his new speed record to be shattered soon by a new rocket plane, the steel-bodied Bell X-2. The X-2's steel construction is aimed at reducing some of the heat problems created by friction at such speeds.

Science News Letter, December 26, 1953

ELECTRONICS

Optical Sensing Device

Data reader, FOSDIC, capable of translating up to 10,000,000 answer positions per hour for use in electronic computers, built by National Bureau of Standards.

► A HIGH speed electronic device, called FOSDIC, that can read marks on census data sheets and feed the information directly to an electronic computer for processing has been built by the National Bureau of Standards.

Use of FOSDIC will provide an accurate, convenient method for mathematically treating much of the data obtained in a census count. It is expected to reduce greatly the large volume of paper work required to summarize census information.

Designed at Standards for the Bureau of the Census, FOSDIC may be generally applied to the processing of other types of information that must be handled in large quantities such as business and labor statistics.

As part of a program to speed up processing census data, the Census Bureau has been using UNIVAC, an electronic digital computer. This machine can process data much faster than it can be translated from the data sheets, so FOSDIC, a contraction for "Film Optical Sensing Device for Input to Computers," was designed to speed up the translation process.

The machine reads microfilm copies of census takers' documents and processes the information contained in the form of positioned marks into electrical pulses that are recorded on magnetic tape. The magnetic tape can then be used directly by the computing machinery.

Basically the instrument is built around a combination of two rather common electronic devices, consisting of a cathode-ray tube and an electric eye. In combination, these two devices can visually sense whether or not pencil or pen marks exist on particular spots of an answer form. Since FOSDIC utilizes an optical principle, marks may be made with any common type of pencil or pen.

When the original documents are micro-filmed, they do not have to be precisely aligned. Instead, an aligning index marker is printed on the form below each column of twelve possible answer positions. One column might contain answers to six yes-no questions.

When the device scans a census form, its beam moves across a page until it senses a mark indicating possible answers in the column above. FOSDIC then sends its scanning beam up the column, reading and recording out on the magnetic tape each tally mark. Upon completion of the column, the machine then searches for the next index.

To assure accuracy, FOSDIC keeps count of the number of columns read on each page. If for any reason a column is missed,

the device makes a record on the magnetic tape informing the computer that the preceding information is not trustworthy. Under laboratory test, FOSDIC has shown that it has nearly perfect performance when good marking and filming conditions exist.

Currently the equipment is designed to provide for a maximum of some 2,800 answer locations on each frame of 16mm microfilm—an area of about one-quarter square inch. Its speed corresponds to a reading transcription rate of about 60 document sides per minute, and the transcription accuracy appears to be equal to or better than that of a skilled human copyist.

FOSDIC was shown for the first time to scientists and engineers attending the Joint Computer Conference and Exhibition sponsored in Washington by the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the Association for Computing Machinery.

Science News Letter, December 26, 1953

ZOOLOGY

Unusual Rats Collected In Thailand for Museum

► WEIRD RATS, some two feet long and colored orange, buff, yellow-brown and blue-gray, were among 2,000 mammals and birds collected in Thailand for the U. S. National Museum by H. G. Deignan, associate curator of birds at the Smithsonian Institution.

The rats were caught in a region of high limestone crags and forests north of the Chao-Phraya river delta.

Science News Letter, December 26, 1953

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

EXPERIMENTAL ELECTRICITY FOR THE BEGINNER—Leonard R. Crow—*Scientific Book*, 240 p., illus., paper, \$2.50. A book in non-technical language intended for grade school pupils, 4-H Club members and other novices. Many experiments are described.

THE FIRST BOOK OF BRIDGES—Creighton Peet—*Franklin Watts*, 68 p., illus., \$1.75. Explaining, for young boys, bridge building from simple log structures to the modern suspension bridge.

METHODS OF THEORETICAL PHYSICS: Parts I and II—Philip M. Morse and Herman Feshbach—*McGraw-Hill*, 1978 p., \$30.00 (or \$15.00 per volume). Presenting the mathematical tools most useful in the study of the many branches of physics, with examples of how they are used.

THE POLYPORACEAE OF THE UNITED STATES, ALASKA AND CANADA—Lee Oras Overholts, prepared for publication by Josiah L. Lowe—*University of Michigan Press*, University of Michigan Studies Scientific Series Vol. XIX, 466 p., illus., \$7.50. Especially for this group of fungi, the strides made in the past half century have been tremendous in straightening out confusion and discord in nomenclature. This work brings together the newest data, although the editor points to the fact that many gaps remain to be bridged.

THE PSYCHIATRIST HIS TRAINING AND DEVELOPMENT: Report of the 1952 Conference on Psychiatric Education held at Cornell University, Ithaca, New York, June 19-25, 1952—John C. Whitehorn, Francis J. Braceland, Vernon W. Lippard, and William Malamud, Eds.—*American Psychiatric Association*, 214 p., \$2.50. This book points to the pressing need for the services of psychiatrists in preventive work as well as in the care of the mental ill, and discusses primarily the training of career psychiatrists.

PUBLICITY FOR PRESTIGE AND PROFIT—Howard Stephenson and Wesley Fiske Pratzner—*McGraw-Hill*, 304 p., \$4.50. Prestige in public relations is best developed through good publicity. Intended as a working manual.

SPACE TRAVEL—Kenneth W. Gatland and Anthony M. Kunesch—*Philosophical Library*, 205 p., illus., \$4.75. Tracing the history of rockets from the "fire arrow" invented by the Chinese and used by them in battle in 1232, the

use of the rocket in battle in Europe in 1379, German experiments in 1405, to the V-2 developed in Germany during World War II. A final chapter speculates on the future.

WHY WE SAY . . . : A Guidebook to Current Idioms and Expressions and Where They Came From—Robert L. Morgan—*Sterling*, 128 p., illus., \$2.00. Many of the words and expressions that we use today reflect different cultures. The origin of some of the most popular are given here.

Science News Letter, December 26, 1953

INVENTIONS

Patent Review for 1953

Numbers following items are U.S. Patent numbers. Printed copies of patents can be obtained from the U.S. Patent Office at 25 cents each. Order by number, do not send stamps, and address orders to the Commissioner of Patents, Washington 25, D. C.

Notable and interesting inventions patented during the year include:

A helicopter rotor which does not require the pilot to control the pitch of the blades. Patent 2,627,929.

A system to control the flight of antiaircraft shells and other missiles by ultra-high frequency radio signals. Patent 2,629,289.

A radar device giving both visual and audible warning to the pilot when he is approaching mountains or other obstacle. Patent 2,631,277.

Prismatic glass to cut down the glare in an automobile's rear view mirror. Patent 2,631,498.

A gas turbine engine for automobiles. Patent 2,631,427.

A twilight computer for use in planning flights over the Arctic where the twilight is extended and nights are six months long. Patent 2,633,295.

A load release to keep a wind-filled parachute from dragging its cargo across the ground, water or snow. Patent 2,634,155.

A method of scrambling television pictures, applicable to secret wartime messages and to pay-as-you-see-it systems. Patent 2,636,936.

A special helmet which allows an airplane pilot to move his head freely during normal flight, but which braces it firmly against buffeting when there is sudden acceleration or deceleration. Patent 2,638,293.

A new target for atom smashers that will cause a larger portion of the electrons to be converted into X-rays. Patent 2,640,924.

A method for cooling high speed turbine blades of rocket engines by making the blades hollow and circulating air through them. Patent 2,641,040.

An improved body armor for troops in combat, consisting of from 12 to 15 laminated layers of a tightly woven nylon fabric. Patent 2,640,987.

A quick method for imparting a hickory smoke flavor to meat. Patent 2,641,544.

A process for canning whole, fresh milk so that it does not have a cooked taste. Patent 2,642,363.

An indicator showing extent, rate and severity of airplane icing conditions. Patent 2,641,928.

AGRICULTURE

Corn Leaves Deceive: Starved, Look Healthy

▶ LIKE SOME children, corn can look healthy and actually be sick, F. G. Viets, Jr., C. E. Nelson and C. L. Crawford of the U.S. Department of Agriculture reported to the Soil Science Society of America meeting in Dallas, Tex.

In one field they found healthy looking plants with low yields. A check revealed that the plants were starved for nitrogen, although the leaves did not show the yellow tips commonly associated with nitrogen deficiency. Application of nitrogen to the field increased the yield.

Science News Letter, December 26, 1953

A tiny camera with its own light source for taking pictures inside the body. Patent 2,641,977.

X-rays in colors which show up substances like slivers of glass invisible to ordinary X-rays. Patent 2,644,096.

A way of sending military messages by radio without enemy interception by interspersing the message signals between bursts of radio jamming pulses. Patent 2,645,677.

A weather balloon made of neoprene treated with a plasticizer to protect the fabric against the cold at night. Patent 2,646,370.

A "snap sampler" to enable a drone airplane to obtain samples of air from radioactive clouds after atom bomb explosions. Patent 2,645,940.

A flotation process for recovering uranium more easily from its ores. Patent 2,647,629.

A substance that prevents corrosion in idle internal combustion engines if sprayed into the cylinders. Patent 2,648,643.

A compound containing haloaryl sulfinic or thiosulfinic acid or their salts for use to control the growth of plants. Patent 2,632,598.

Use of strontium titanate as a substitute for ordinary glass in special telescopes and other optical instruments. Patent 2,628,156.

A device for fixing slow leaks in tires by forcing an air-setting latex paste through the rupture in the casing until it covers the hole in the inner tube. Patent 2,646,707.

A color film for the Polaroid-Land "one-minute" camera. Patent 2,647,049.

An apparatus for remote control bombing with gliders. Patent 2,649,262.

Clothing to protect servicemen against mustard gas and other vesicants. Patent 2,649,389.

An electricity-conducting glass sandwich which is fortified against operational failure, for such use as in heated windshields. Patent 2,650,976.

A safety seat, for airplane pilots and others, with a harness that tightens automatically in case of mishap. Patent 2,650,655.

A fluid drive system for turbo-prop aircraft that permits the turbine to start unloaded. Patent 2,652,730.

A submersible barge for petroleum engineers to use in deep water. Patent 2,653,452.

Plastic landing mats for temporary air fields; they grip the ground and can be stacked in layers for added strength when heavy planes are to land. Patent 2,653,525.

A rocket for remote controlled flights; it splits in two when the mission is completed and the instrument-carrying nose is lowered

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Why ever again take a chance on spending your money for a poor performance or recording? Harian's 64 page guide, "Only the Best in Recorded Music," shows at a glance what the nation's music critics have decided are the best long playing recordings of symphonies, operas, ballets, concerts, etc. Listing hundreds of excellent records, it makes certain you get all the musical enjoyment your money should bring, and it's a magnificent guide to expanding your record library. Price just 50c, so small a sum you'll never miss it, but what extra enjoyment it can bring you. For your copy, wrap up 50c in coin and mail to **HARIAN PUBLICATIONS, 1 SCRANTON STREET, GREENLAWN, LONG ISLAND, N. Y.**

safely through use of helicopter motors. Patent 2,654,320.

A device for preventing icing in a jet engine. Patent 2,654,992.

A glove hermetically sealed to garment sleeve for protecting flesh against dangerous liquids and gases. Patent 2,656,663.

A floating oil storage tank for off-shore drillers. Patent 2,655,888.

A non-wetting plastic matrix for printing electronic circuits on plastic, ceramics or glass. Patent 2,656,570.

An electromagnetic pump for handling "hot" liquids in atomic plants. Patent 2,658,452.

The synchrotron, a powerful atom smasher that increases the magnetic field in proportion to increase in mass of the electrons at high energies. Patent 2,624,841.

A warning device for dangerous temperatures in jet airplane engines. Patent 2,621,239.

A mechanical circulation device to substitute for a patient's heart and lungs during delicate heart operations. Patent 2,659,368.

Science News Letter, December 26, 1953



Mistletoe

► MISTLETOE, WHICH all over the country is making boys bold and girls blush, has many reputations. None are as romantic as the one we briefly bestow on it at the Yuletide season.

For one thing, during the workaday months of the year mistletoe is thought of, if at all, preeminently as a plant pest. It is a plant that grows on trees as a parasite. In Australia mistletoe reached the status of a major pest. Its principal victim there was the eucalyptus tree, on which it worked such damage that weed killers were used in a full scale campaign against it.

Mistletoe is native to both the Old World and the New, the two being different forms of the same family. Many legends and charms were associated with the mistletoe in Europe. According to one belief, the mistletoe was once a full grown tree that grew like any proper tree on its own roots sunk firmly in the soil. Then, the legend has it, its timber was cut for the cross on which Christ was crucified. Since then it has dwindled to its present low estate, a dwarf and a parasite living off other trees.

The belief is still held in some of the more superstitious parts of Germany that mistletoe will make ghosts appear and if you talk to them they will answer you.

Among the ancient Druids, mistletoe was a symbol of spirit, since it grew in the air on the sacred oak. At the year's end, a Druid priest in a white robe would cut the mistletoe with a golden sickle. A white cloth spread on the ground made certain that the twig did not touch earth.

The people would make charm bracelets and rings of the plant. Worn on the person or fastened over doorways, it was believed to have power to ward off evil.

The seeds of this parasitic plant, which has meant so many different things to different men and different ages, are given a wide range by the birds that feed on the berries. The seeds are sticky and they adhere to the bill of the feeding bird. Later the bird will clean his bill by rubbing it against the bark of a tree.

The seed sticks to the bark. Eventually it puts out a tap root which penetrates the bark and draws on the food circulating in the tree's sap.

Mistletoe has many facets: Cupid's ally, plant pest, magic charm, wood of the cross. It is also the official state flower of Oklahoma.

Science News Letter, December 26, 1953

MEDICINE

Warns of Hearing Loss From "Gin and Tonic"

► "GIN AND tonic," alcoholic beverage that has grown increasingly popular, at least in eastern United States, may cause ringing in the ears and even deafness in some persons, Dr. Stephen Bennett Yohalem of New York warns in a report to the *Journal of the American Medical Association* (Dec. 5).

The ear trouble would come from the quinine in the "tonic," or quinine water. While the amount per pint is probably so small that the average grown person would have to drink an "enormous" amount to get the ear trouble, some persons have an idiosyncrasy to quinine and they might get in trouble from smaller amounts of the drink.

Science News Letter, December 26, 1953

Questions

ASTRONOMY—When will a total eclipse of the sun next be visible from the U. S.? p. 407.

□ □ □

DERMATOLOGY—How can the chronic itcher get relief? p. 402.

□ □ □

ELECTRONICS—What is FOSDIC? p. 409.

□ □ □

MEDICINE—For how long has a two-headed baby been known to survive? p. 405.

□ □ □

SURGERY—Who were the original Siamese twins? p. 404.

□ □ □

Photographs: Cover and p. 403, U. S. Army; p. 405, General Electric; p. 412, Vern S. Skamser Co.

ERRATA, Vol. 64, Nos. 1-26, July-December, 1953

PAGE	TITLE BEGINS	CORRECTION
24	New Anti-Ulcer	Last paragraph, lines 2 and 3, read retail for 5 to 7 cents a tablet.
47	Better Humidity	Par. 4, first sentence to read The instrument employs the principle of selective absorption of two bands in the infrared portion of the visible spectrum.
134	Clue to	Col. 2, lines 16-18, read <i>Escherichia coli</i> , <i>Staphylococcus aureus</i> , <i>Bacillus megatherium</i> , <i>Pseudomonas aeruginosa</i> .
184	Soap and Water	Research not based on experimental work, but presented new theory explaining how bacteria are killed.
196	"Cosmic Stopwatch" (p. 195)	Line 5, to a hundred years read to nearly 300 years.
229	Fluorescent Light	Line 4, Stoutmeyer for Stoutemyer.
240	Do You Know	Lines 3 and 4, order for family.
278		Col. 3, last line, read attain speeds of 70 miles an hour.

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✿ **AIR COOLER**, although not a room air conditioning device, is placed a few feet away from the user and is plugged into a household electrical outlet. It chills and dehumidifies air passing through it and blows the cool air toward the user. In winter, it humidifies air passing through its mechanism.

Science News Letter, December 26, 1953

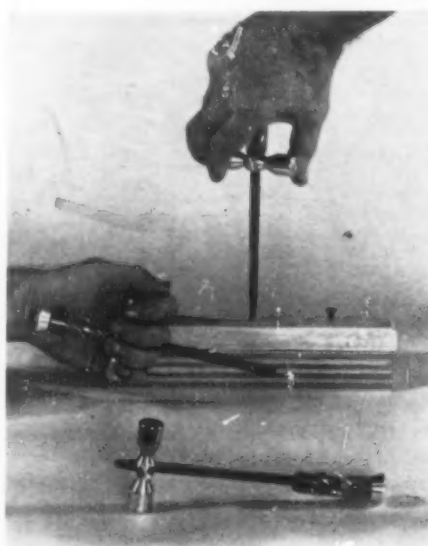
✿ **FRY BOARD** is made of hickory wood and has a little wooden handle. It is placed on meat in the frying pan to speed up the cooking. Measuring nine inches long, 3.5 inches wide and $\frac{3}{4}$ of an inch thick, the device is especially good to keep bacon "ironed out."

Science News Letter, December 26, 1953

✿ **DOOR PULL** has an extension at its bottom so that persons can pull doors open by hooking an arm around the extension. Said to be particularly suitable for hospitals, the door pull is optional hardware on a special hollow metal door.

Science News Letter, December 26, 1953

✿ **SPINNING SCREWDRIVER** has a special handle tip that twirls. Designed to help the housewife and mechanic tighten screws rapidly, it is shown in the photograph. In addition, a metal mallet-like device slides up the shank of the screwdriver to provide extra gripping leverage when needed. When



positioned near the screwdriver's blade, the mallet also doubles as the business end of a tack hammer.

Science News Letter, December 26, 1953

✿ **RUSTY-METAL PRIMER** is particularly useful where rust removal by sand-blasting is impractical or dangerous. Loose rust is scraped off the metal to be treated with vinyl resin-base protective topcoatings.

Then the primer is applied followed by two coats of the anti-corrosion material. This primer is not recommended for new or bright metal.

Science News Letter, December 26, 1953

✿ **ANTI-CORROSION CHEMICAL** has been developed for use on automobile battery terminals and in other situations where metal-to-metal contact breeds corrosion. The chemical is painted on the metal to be protected.

Science News Letter, December 26, 1953

✿ **EXTRA-WIDE BRAKE** pedal for cars with automatic transmissions can be installed in less than a minute, the maker reports. Designed to be used by either the right or left foot, the pedal originally was developed to aid the handicapped driver.

Science News Letter, December 26, 1953

✿ **PLASTIC-TREATED MITTENS** are designed especially for children who like to make snowballs. The mittens are waterproof, therefore melting snow cannot filter through to soak the fleecy innerlinings.

Science News Letter, December 26, 1953

Do You Know?

Firearm accidents take about 2,200 lives annually in the U. S.

The U. S. consumes 35% of the world's total soap production.

Heating pipes are being installed as a part of Boston's new expressway to melt snow and ice from all access ramps.

Water stains on glass pitchers and vases usually can be removed by rubbing them vigorously with freshly cut potato.

In America there are more than 4,400 privately owned tree farms, operated on about 28,000,000 acres.

The sales value of soft drinks in 1952 exceeded that of ice cream and almost equalled the production value of the plastics industry.

It is not safe to collect young, unopened mushrooms for eating, since it is often difficult to distinguish between poisonous and edible species in the early stages.

A specially built labor-saving device has been introduced on a railway project in North Norway; weighing seven tons, it lays 108-foot lengths of rail at a time, complete with 52 pre-fixed cross ties.

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Algae
Allard,
Allen,
Allergie
Alphab
Alter, I
Alumin
Alvarez
Amdur,
Amebas
Amino
Andrew
Anemia
Anesthe
Anger
Animal
Animals
108,

Antiairo
Antibiot
180
231

Antibod
Antihist
Appel, E
Appendi
Apple
Applega
Applian
Archer,
Arctic b
Ardran,
Arend, S
Arm res
Armitage
Army wo
Arteries

Arthritis
Asbestos
Ashe, Jo
Aspirin
Asthma
Astin, A.

Astronom
Astwood,
Athletes
Atkinson
Atom sm
Atomic m
Atomic r
Auger, P
Aureomy
Auto def
Averill, E
Aviation
Axelrod,

Baade, W
Baal, H.
Babies ...

Baby bott
Baby care
Baby carr
Baby dish
Bachrach
Bachrach
Bacteriolo
Bagnio, S
Bain, R.
Bair, Tho
Baker, Ke
Balchum,
Baldness

A-Bombs 25, 54, 326
ACTH 149, 199, 376
AD-X2 6, 7, 8, 39, 148,
262, 339, 358
Abbot, Charles G. 141
Abell, George 315
Aberle, Sophie D. 142
Abstracts, Pre-Publica-
tion 181
Accidents 27, 52, 191, 198
Achenbach, Paul R. 72
Acoustical "fish net" 400
Adams, John E. 402
Adams, R. E. 126
Adamstone, F. B. 24
Adrenal glands 169
Affeldt, John E. 99
Age, Men's dangerous 158
Agnes, C. M. 182
Ahern, John I. 280
Air cooler 412
Air defenses 61
Air pollution 77, 85, 311
Airplane Landing Aid 133
Airplane noise 91, 341
Airplanes 52, 75,
81, 87, 91, 184, 228,
244, 337, 338, 409
Airplanes, Designing 344, 386
Alaska 134, 179, 207, 411
Alcohol 134, 179, 207, 411
Alcoholics 358
Alexander, K. M. 387
Algae 35, 199, 201, 247, 388
Alard, H. A. 106
Allen, Ernest 274
Allergies 294
Alphabet 384
Alter, Dinsmore 130
Aluminum 84, 232
Alvarez, Luis W. 310
Amebias 200, 342
Amino acids 152
Andrews, Jay D. 53, 169
Anemia 297
Anesthetic 111, 297
Anger 52, 191
Animal diseases 232
Animals 9, 21, 30, 83,
106, 131, 166, 169, 191,
230, 239, 254, 259, 291
Antiaircraft gun 95
Antibiotics 73, 134,
180, 185, 206, 207, 217,
231, 232, 249, 280, 291,
295, 310, 312, 324, 360
Antibodies 277, 371
Antihistamine 357
Appel, Kenneth E. 375
Appendix 199
Apple 361
Applegarth, A. R. 372
Appliance mat 372
Archer, Sidney 329
Arctic bibliography 264
Ardan, G. M. 388
Arend, S. 200
Arm rest 240
Armitage, H. M. 398
Army worms 152
Arteries 4, 70, 155, 311
Arthritis 35, 159, 297
Asbestos 311
Ashe, John 83
Aspirin 231
Asthma 72, 287, 295
Astin, A. V. 6, 8, 79, 148,
262, 339, 358
Astronomical highlights 293
Astwood, E. B. 344
Athletes, Recovery of 27
Atkinson, William B. 56
Atom smasher 163, 179, 310
Atomic nucleus 117, 135
Atomic power 93, 353, 359
Atomic reactor 284
Auger, Pierre 67
Aureomycin 159, 383
Auto defectors 164
Averill, Harold P. 44
Aviation's future 314
Axelrod, A. E. 312
Baade, W. 103, 175, 186, 376
Baal, H. J. 40
Babies 72, 100, 132, 202,
297, 388, 405
Baby bottle 16, 28
Baby care 62
Baby carriage rocker 56
Baby dish 320
Bachrach, Howard L. 323
Backache operation 296
Bacteriological warfare 263
Bagno, Samuel 124
Bain, R. V. S. 344
Bair, Thomas D. 215
Baker, Kenneth F. 212
Balchum, Oscar J. 20
Baldness 312, 356

Baldwin, Horace S. 295
Baik, Jacob L. 230
Bail, Gordon 200
Bananas 296
Bandage, Nylon elastic 240
Barbecue 128
Barium titanate 37
Bartlett, Grant R. 55
Baseball cap 208
Basin, Underwater 178
Bassham, James A. 179
Bats 303
Batterman, Robert C. 35
Battery additive 6, 7, 8,
18, 30, 39, 148, 262
Battery assembly 288
Bauer, Franz K. 136
Baum, William A. 150, 388
Baume, Louis J. 103
Bayley, Nancy 178
Beals, Ralph 104
Bean, C. Thomas 184
Bear 375
Beard, Raimon L. 44
Beard powder 160
Bearings 158
Beck, C. A. 357
Bed, Sportman's 336
Bed sores 312
Bees 73, 380
Beetle 131, 347, 398
Beiser, Richard B. 162
Bengelsdorf, Irving S. 344
Benjamin, H. B. 118
Bennett, Clifford 141
Bennett, Willard 310
Benson, Ezra 249
Bent, Arthur Cleveland 107
Benton, Joseph G. 195
Berger, Alfred J. 70
Berger, Carl 313
Bergmann, Ernst W. 198
Berke, Phillip 383
Bernstein, Arthur 230
Berry, L. Joe 102
Berry plant, New 342
Bess, H. A. 25
Beufon, R. J. 265
Beverage carrier 304
Beverages, Summer 46
Bhat, J. V. 216
Bicycle light 352
Bigelow, W. G. 134
Billig, E. 71
Bird, F. T. 78
Bird feeder 224
Birds 41, 73, 85, 102,
136, 319, 357
Birthmarks 29, 341
Bison 158
Black, John 196
Black, Donald M. 215
Blackwelder, Richard 166
Blades, Brian 243
Blakely, C. L. 73
Blawett, M. Hildred 265
Blind child 124
Blinders 59
Blockley, Vincent 165
Blood, Animals' 179
Blood clots 182, 278, 281
Blood donations 287, 329
Blood expanders 201,
211, 295
Blood groups 57, 248, 406
Blood plasma, New use 312
Blood platelets 130, 277
Blood pressure 130, 147,
168, 260, 279, 373
Bloodletting 265
Blue babies 214, 278
Bluemie, Lewis W., Jr. 325
Boblitz, O. W. 164
Bock, John E. 213
Bohr, Niels 67
Boicey, James H. 167
Bolton, John G. 186
Bomb door, Rotary 103
Bomber 152, 163
Bombing 137
Bonmartini, Giovanni 79
Book jacket 160
Book rack 288
Boot, Armored 329
Bottle opener 176
Bowden, K. 312
Bradley, J. Chester 166
Brain 130, 132, 142,
143, 168, 230, 402
Brake 16, 412
Branson, E. C. 212
Brattstrom, Bayard 57
Bray, Ralph 149
Bread 39, 43
Bridge span 215
Brockman, H. LeRoy 243
Broker, Rajul 216
Browski, J. 133
Brooks, Benly F. 162
Brooks, E. M. 264
Broun, G. O. 371
Brown, Glenn 28
Brown, James B. 248, 313
Brown, Roger E. 62

Brown, W. M. Court 185
Brucellosis 50, 377
Brush, Antistatic 144
Bruton, Ogden C. 245
Bryson, Vernon 162
Buchanan, D. I. 329
Buchsbaum, Ralph 116
Building, New 45
Bulls, Immortality for 8
Bunge, R. G. 292
Bunions 214
Burg, Anton B. 179
Burgess, E. D. 359
Bursitis patients 256
Burt, Wayne V. 313
Burton, Glenn W. 246
Bus 377
Bush, Vannevar 35, 118, 388
Butsch, Winfield L. 248
Butterfly 65, 69
Cabbage concentrate 265
Calcium 159
Callaway, J. Lamar 100
Calorie 166
Calvin, M. 179
Camels 198
Cameras 19, 77, 240, 393
Cameron, A. G. W. 376
Cancer 42, 100, 168,
181, 184, 197, 232, 248,
278, 280, 311, 313, 377, 402
Cancer training, TV 167
Cancer virus 245
Candle, Electric 288
Capacitor, Tiny 229
Car safety-lock 224
Carbon, Radioactive 179
Carl, Marion E. 315
Carl, Walter T. 370
Carmichael, Leonard 249, 339
Carpenter, William K. 319
Carpet padding 128
Carr, Duane 377
Carrabino, Joseph 94
Cass, Leo J. 116
Castle, W. E. 297
Caterpillars 44, 222
Cats 215, 325
Cattle 130, 201, 333, 370
Caveness, William F. 142
Celliac disease 132
Cells 42, 116, 212, 275,
307, 340, 387, 388
Ceramic coating 93
Cerebral palsy 168, 356
Cermets 93
Chain, Aluminum 240
Chain letters 372
Chamovitz, Robert 291
Charles, Margaret S. 21
Charlesby, A. 107
Charney, Jule 196
Chelating agents 283
Chemicals 72, 412
Cheney, Garnett 265
Chess set 48
Chickens 197, 373
Child, Blind 101
Childbirth 214
Children 57, 78, 169
Chiles, Noah H. 278
Chivers, W. H. 233
Chlorophyll 43, 168, 406
Christmas 386, 399, 411
Chromosomes 42, 177, 178
Churchill, Eruc W. 198
Churchill, Winston 20
Cigarette lighter 336
Cigarettes 41, 45
Clark, A. Bernice 312
Clark, T. F. 55
Clay particles 338

Clayton, John Jr. 200
Cleft palate 56, 59
Clem, LeRoy H. 217
Clements, Thomas 104
Clifton, Eugene E. 281
Climate 22
Clinical Center 229
Close, Albert W. 152
Clothes, Laundering 272
Clothes sprinkler 64
Clothesline 24
Clothing stains 280
Coal pipeline 189
Cochran, Kenneth W. 388
Code, A. D. 160
Coffee maker 345
Coffey, Robert 274
Cohn, Edwin J. 345
Colchicine 47
Cold 228
Cold sores 308
Collins, C. B. 137
Collins, Henry B. 264
Combat, Effects of 104, 362
Comets 8, 38, 133, 150,
151, 315, 336
Comics 71, 336
Commerce, Dept. of 358
Communism espousal 230
Compass 117
Computers, Electronic 75, 101, 152, 203, 279,
309, 323, 357, 386, 409
Concrete, Detector for 233
Conference psychology 82
Conger, Paul 200
Conover, Lloyd H. 232
Conservation, Land 373
Contact lenses 261
Conway, Herbert 29
Cook, Leonard 200
Cock, Robert C. 263
Cooking 201
Cooley, Denton A. 4
Cooper, Herbert K. 59
Cord pulls 96
Corn 181, 355, 410
Corner, George W. 142, 388
Corrman, Ivor 278
Correll, Donovan S. 40, 330
Cortisone 30, 38, 169,
199, 248, 366
Cosens, Kenneth W. 271
Cosmic rays 89, 150, 195
Cosmotron 103
Cotton fibers 153
Cottonseed 281
Cougar 26
Cough-Stopping drug 116
Council for European Research 67, 163
Coster, William T. 168
Covies, Raymond R. 174
Cows 23, 201
Cox, William J. 168
Crabs 40
Cram, Donald J. 360
Cranberries 311, 380
Crane 51
Cregan, Judith 389
Crescitelli, Frederick 260
Cressey, Donald 173
Crick, F. H. C. 387
Cromwell, L. W. 159
Crossfield, Burt 127
Crowell, Jack 137
Crystals in germs 386
Cuckoos 23
Culture, Right to 104
Cunningham, R. W. 291
DNA 178, 387
Dack, Simon 214

Dairy herd 197
Damon, Albert 278
Dan, Katsuma 42
Darroch, Ronald N. 57
Dartnall, H. J. A. 260
Das Gupta, M. K. 376
Dashboard tray 32
Davey, J. T. 276
Davidow, Bernard 247
Davidson, Harold B. 214
Davis, Stanley 362
Davis, Warren G. 56
Davis, Watson 52, 215,
217, 390
Dawson, E. Yale 88
Day, Boyale E. 78
Day, W. H. 207
DeBakey, Michael E. 4
De Salardi, Albert B. 233
Dean, John P. 20
Deatherage, F. E. 206
Deaths, Bleeding 195
Decorating kit 384
Deevey, Edward S., Jr. 37
Defense, North America 327
Deferments, College 104
Dehumidifier 128
Deignan, H. G. 409
DeLaney, John P. 357
Dennis, Clarence 248
Dentifrices 21, 131, 227, 310
Dentists 230, 244
Desert, Reclaiming 342
DePaul John E. 110
Detergents 12
Dexheimer, W. A. 93
Diabetes 108
Diaper, Pinless 288
Diathermy 14
Diatoms 200
Dictionary, Talking 156
Diet 184, 295
Digestive track 369
Dill, Robert F. 25
Dinken, Harold 54
Dishwasher 124
Dobie, John B. 37
Dobson, Roy 315
Dodson, Helen 141
Dogs 21, 82, 130, 241, 250
Doll, Hopi 378
Doolies, Labor-Saving 231
Doolittle, S. P. 189
Door devices 80, 288, 412
Doudoroff, Peter 69
Douglas, Beverly 313
Douglas, Gordon 243
Douglass, A. E. 10
Dowd, J. J. 71
Drawing 304, 368
Dreger, Ralph Mason 345
Drennan, M. R. 355
Drills 288, 336
Drought 28, 50, 141
Drugs 24, 148, 180, 200, 216
Dryden, Hugh L. 53
du Vigneaud, Vincent 243
Duchene, Maurice 51
Duck 79
Duckworth, Charles U. 61
Dugan, L. R. Jr. 201
Dummies 143, 185, 369, 378
Dunkle, David 233
Duplice, H. T. 46
Duran-Reynolds, F. 83
Dust hood 400
Dusting mitt 304
Dye 9
Dymond, Rosalind 232
Eady, E. T. 196
Earle, F. M. 61
Earphones 368
Earth 137, 139, 183, 388
Earthquakes 28, 137
Eaton, Orson N. 376
Eberhart, Hal 89
Eberling, Walter 25
Eckert, Wallace J. 326
Eckles, Howard E. 263
Eclipse, 1954 264, 407
Edgerton, Milton T., Jr. 328
Egan, James P. 227
Eggs 110, 200, 371
Einstein theory 87, 103
Eisenhower, Milton S. 249
Electron microscope 243, 323
Electronic machinist 345
Electrons 117, 281
Elements, Artificial 179
Elevators 55
Ellinger, Joseph P. 243
Ellison, Douglas G. 345
Ely, Ray 247
Embezzlement 173
Embryos, Human 388
Emery, Kenneth O. 178
Emery board 224
Engelberg, H. 155
Engineering outlook 294
English, David C. 264

SCIENCE NEWS LETTER

Index - Vol. 64

Nos. 1-26-July to December, 1953

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List out and insert in binder at beginning of volume.

Errata appear on p. 411

English, Learning	117	Glucuronic acid	83	Honey	284	Jolly, Keith	355	Liver	168	Minkow	
Enoch, Jay M.	261	Glutathione	376	Hopkins, D. M.	185	Jones, Philip N.	231	Livingston, M. S.	163	Mitchell	
Enos, William F.	70	Gold	35, 280	Hoppe, Donald A.	193	Jones, R. Clark	343	Loco weeds	105	Mittens	
Enzyme	182	Goldenrod	78	Hormones	189, 235, 243, 326, 364	Jorgenson, George F.	56	Locusts	276	Mitton	
Epilepsy	61, 118, 168	Goldman, Leon	117	Horning, Evan C.	260	Josephson, Donald V.	152	Log cabins	63	Moas	
Eraser	64	Golfer's aid	128	Horseshoe crab	281	Joy, Alfred H.	149	Long, Robert R.	196	Moffett	
Erdos, Leslie L.	156	Golgi net	24	Horsfall, Frank L. Jr.	328	Jupiter	388	Long, W. M.	133	Mold sp.	
Erosion	390	Gomber, H. J.	95	Horton, Charles	377	Just, John H.	85	Longacre, J. J.	313	Mold sp.	
Erysipelas	390	Gomser, Bruce W.	105	Hose, Lightweight	344			Loom, Hand-Held	272	Monahy	
Eskimos, Early	265	Gooding, C. M.	3	Hospital	22, 73			Loosli, Clayton G.	152	Monkey	
Evolution mechanism	148	Goodman, Clark	135	Houpt, T. Richard	198			Loran	359	Monkey	
Exposure meter	180	Goodman, Thomas L.	233	House calls	163	Kaesberg, Paul	197	Lord, Merrill	182	Monto	
Eyes	249, 260, 271, 343	Goodwin, A. J. H.	355	Houses	39, 85	Kalinga prize	67	Love, Lasting	132	Moon	
		Gordan, Gilbert S.	402	Housewives' hands	246	Kaplan, Lawrence I.	136	Low, Barbara W.	313	Moore	
Fahrney, Delmer S.	137	Gorelik, Aaron N.	214	Howe, Everett D.	342	Karabinos, J. V.	184	Lowdermilk, W. C.	342	Moran	
Fairlie, Chester W.	217	Gotaas, Harold B.	155, 247	Hoyle, Fred	175	Kallejian, Verne	82	Lowry, Robert D.	200	Moreau	
False teeth	174	Gould S. E.	95	Hudson, J. C.	215	Kaufmann, Carl F.	217	Loynd, Harry J.	148	Morgan	
Fatigue	20	Graham, Bruce D.	162	Huggins, Charles	142	Kaufman, William	377	Ludena, F. P.	111	Morgan	
Fawbush, Ernest J.	214	Grain	126, 360	Hughes, Frank C.	247	Kavanagh, Thomas C.	215	Luggage	272	Morgan	
Feaching, Franklin	73	Grass	78, 377	Hubert, W. C.	365	Kelkin, D. G.	179	Lyle, Dorothy S.	20, 243	Morris	
Fechter, Harry	117	Gravity, Lack of	127	Humans relations	70	Kellogg, W. N.	207	Lymph nodes	27	Morris	
Ferlin, H. J.	184	Grease	129, 135	Humidity measurer	40	Kelly, M. J.	8, 79, 148, 262	Lynch, J. Joseph	143	Moseley	
Fermi, Enrico	105	Green, J. D.	73	Humm, Harold J.	335	Kemmerer, Arthur	207	Lyon, J. B.	246	Moskow	
Ferris, B. G., Jr.	99	Greene, Benjamin F., Jr.	132	Humus	155	Kendall, Ralph E.	217			Moth	
Fesenkov, V. G.	149	Greene, Benjamin N.	68	Hunger	118	Kenney, Malcolm E.	179			Mothba	
Field, Henry	56	Griffenhagen, George	265	Hunt, John	248	Kent, Bartis	200	McBride, Earl D.	214	Motor, I.	
Filmer, R. S.	380	Griminger, P.	249	Hunter, Oscar B., Jr.	216	Kerr, Frank J.	147	McCoy, Elizabeth	324	Mt. Eve	
Fine, Bernard M.	46	Gross, Marsha S.	75	Hurricane	67	Kesel, Robert G.	227	McCutcheon, R. J.	200	Muehrer	
Fire alarm	352	Growth abnormalities	197	Huxley, Julian S.	260, 325	Kidney	297	McCrea, J. F.	81	Muffer	
Firewood carrier	282	Guhl, A. M.	105, 339	Hybrids, Better	89	Kilbuck, John	362	McCrea, W. H.	73	Mulder	
First aid	273, 282	Guided missiles	261, 328, 357	Hydraulic press	38	King, James T.	199	McCulloch, Thane	72	Muller	
Fischer, Robert B.	243	Gulf Stream	183	Hydrocortisone	5, 147, 186	Kinsell, Laurance W.	376	MacDonald, George E.	280	Multiplic	
Fish	8, 29, 73, 94, 189, 233, 247, 263, 359, 383	Gums	103	Hydrogen	149	Kinsella, Ralph A., Jr.	119, 342	Macdonald, John B.	228	Munch	
Fisher, Harry J.	132	Gurnett-Smith, A. F.	137	Hypodermic	147	Kinsey, Alfred C.	248	McFarland, Rose A.	278	Munson	
Fishing	36, 48	Gurney, Ashley B.	231	Hypothalamus	345	Kirby, Charles K.	42	McGregor, James L.	261	Murdoch	
Flashbulb	400	Guth, E.	135	Hyrax	176, 190	Kirkpatrick, Paul H.	24	McGregor, John C.	127	Murphy	
Files, Tracing	240	Guyton, Arthur C.	137		112	Kirsner, Joseph B.	291	McIntyre, John A.	117	Murray	
Floor mat	240	Gyrobuses	248		313	Kittner, Karl	207	McIntyre, John A.	117	Murray	
Flowers	148, 189, 284, 383	Gyroscopes	105, 339		189	Kittredge, Joseph	89	McIntyre, John A.	117	Murray	
Fluorescent lighting	229				213	Kitts, Warren D.	201	McIntyre, John A.	117	Murray	
Flying saucer	49, 50				189	Kleegman, Sophia J.	202	McIntyre, John A.	117	Murray	
Folk cures	166				213	Klock, John W.	57	McIntyre, John A.	117	Murray	
Folsom Man	10				39	Knee board, Pilot's	176	McIntyre, John A.	117	Murray	
Food	18, 35, 114, 181, 216, 296				178	Kniesner, Albert H.	227	Macomber, W. Brandon	341	Myer, E.	
Food and Drug Adm.	114				178	Knife, Fisherman's	322	Maegerath, B. G.	216	Myers, J.	
Food packaging	200				178	Knopf, Leon	28	Maggot	29	Myers, J.	
Food poisoning	102				178	Koch, Robert L.	135	Magnetic mine	123	Myrvik	
Foot-and-Mouth	22, 61, 111				12	Koenig, R. T.	184	Magnets, Ring-Shaped	101		
Forest fires	89, 347				127	Koerner, Donald R.	69	Mahler, R. F.	185		
Forests	216				394	Kohl, Jerome	156	Malaria	117, 216		
Forgrave, Paul R.	216				18	Kon-Tiki	55, 207	Man, Early	179, 185, 355, 374		
Fosdick, Leonard S.	227				25, 47, 69, 83, 88, 99	Kondo, Yoshio	89	Mangelsdorf, Paul C.	181		
Fossil fish	233				101, 136, 173, 189	Korff, Serge A.	287	Mann, George V.	216		
Fossils	215				198	Koster, B.	311	Mann, William	355		
Fowler, W. B.	103				338	Kotin, Paul	217	Manpower	51, 63, 153		
Francis, Thomas, Jr.	189				321, 323	Kralovec, R. D.	388	Manus, Study of	256		
Franklin, Sid S.	68				159	Kraybill, H. R.	136	Maps	192		
Frankze, C. J.	345				202	Krebs, H. A.	99	Marble, Imitation	345		
Fraser, Dean	178				310	Krelnin, Sidney	114	Marlinus, Paul	55		
Frederik, Willem S.	116				83, 231, 297	Kriete, Bertrand	325	Marriage statistics	5, 94		
Freedman, Hyman	174				328	Kuhner, Carl S.	184	Marsden, S. J.	229		
Freon-12	198				162	Kulper, G. P.	184	Martson, Mary-Vesta	104		
Friedell, Morris	45				128	Kumm, Henry W.	356	Martin, Paul S.	180		
Frog breathing	99				80	Kurland, Leonard T.	311	Mason, B. J.	190		
Frohn, Adolph	154				112	Kurtin, Abner	32	Mastodon	104		
Frost, D. V.	206				29, 69, 340		32	Mathewson, John	359		
Frostbite, Treating	277				25, 41, 47, 78, 114, 126, 153, 161, 173, 231, 277, 281, 307, 312, 359, 360, 202, 292, 178, 12, 368, 37, 99, 356, 279, 54, 162, 201		32	Mathews, R. E. F.	39		
Fruit disease	144, 412						375	May, Jacques M.	155, 406		
Frying devices	241, 250						57	Maya religion	388		
Fuller, John L.	196						51	Mayer, Rollin H.	328		
Fultz, Dave	29, 201						79	Mazia, Daniel	42, 376		
Fungicides	201						161	Mead, Albert	207		
Fungus infection	134						39	Mead, James	5		
Fungus drug	211						189	Mead, Margaret	15		
Fuoss, Raymond M.	78						36	Medical certificates	230		
Furgason, Waldo	32						149	Meerloo, Joost A. M.	89		
Furnace cleaner	80						274	Meighan, Clement	280		
Fuse plug							55	Meliman, Edward	281		
							198	Meinke, W. W.	104		
Gableman, W. H.	181						169	Melamid, Alexander	375		
Gaiser, Romya A.	167						144	Mental hospitals	230		
Galaxies	150, 186, 218, 376						144	Mental sickness	365		
Gallagher, T. F.	38						225, 234	Mercury	266, 298, 341		
Galloway, William	281						64	Merger rate	110		
Gamma globulin	25, 47						264	Metal, Finishing	80		
Gantt, W. Horsley	230						61	Metal-Resisting aprons	259		
Garbage	155, 271						192	Metals	158, 162, 199		
Garden kit	32						370	Meteor crater	58, 86, 151		
Gardner, John	134						167	Metors	356		
Garner, W. W.	106						245	Mettler, Frederick A.	294		
Gehrig, Lou	184						198	Meyerhoff, H. A.	153, 387		
Geiger, Ludwig A.	199						162, 345	Miall, W. E.	47, 80		
Genes	75, 297						374	Mice	278		
Gerathewohl, S. J.	127						8	Microphone	211, 305, 307		
Gerking, Shelby	189						297	Microscopes	200		
Germas	180, 183, 184						355	Mileage indicator	56		
Germanium	71, 149, 373						8, 339	Miles, Walter R.	73, 152, 207, 216, 247, 406		
Geschickter, Chas. F.	287						376	Milk	247, 406		
Gibbs, Martin	179						16, 64	Milky Way	150		
Giddings, J. L., Jr.	185, 265						190	Miller, Gerrit S.	350		
Gill, Edmund D.	169						244	Miller, Julian	40, 330		
Gilman, S. F.	85						135	Miller, Robert C.	325		
Gilvary, J. J.	103						25	Millman, Peter M.	186		
Glass	72, 167						323	Mills, Bernard Y.	147, 186		
Glasscock, Wilford R.	53						5	Mills, James Edward	44		
Gloves	96						275	Minerals, New	387		
							68	Miners' disease			

168	Minkowski, R. L.	175,	Oxytocin	243	Putnam, Tracy J.	118	Sander, Electric	192	Stain remover	176
163		186, 376	Oysters	53	Putty, Aluminum	176	Sanding block	32	Stainless steel wire	248
105	Mitchell, John W.	185			Pygmalion effect	206	Saunders, Lyle	166	Stamp pad	48
276	Mittens	412					Sawin, Paul B.	75	Stamps, Plastic	224
63	Mitton, John	36					Sawyer, Charles	149	Stanley, Wendell	323
196	Moas	37	PAS	162, 409	RES	178, 212	Sayre, Charles B.	327	Starch, Animal	56
133	Moffett, Robert Bruce	24	Paddle	56	Rackliffe, Robert L.	70	Schaffer, Fred	362	Stare, Fredrick J.	265
313	Mold spoilage preventive	3	Paging service	208	Radar	24, 118, 133,	Scheele, Leonard A.	88	Stark, Robert R.	45
272	Monahan, A. C.	18	Painter's guide	144		182, 228, 246	Schein, M. W.	197	Stars	51, 58, 71, 138,
152	Monkey, Mechanical	304	Paints	32, 185, 192, 304	Radiation	5, 21	Schlein, Marcel	150		143, 149, 186, 218, 266,
359	Monkeys	33, 40, 216,	Pamine	24	Radiation meter	352	Schistosomiasis	329		326, 339, 346, 376, 407
182	Monto, Raymond W.	386	Panda	54	Radio	43, 62, 70	Schlender, William H.	361	Starvation, Human	155
232	Moon	130, 138, 407	Panels, Plastic	208	Radio astronomy	147	Schlink, F. J.	39	Stassinos, Odysseus	31
313	Moore, Alexander M.	180	Paper mills	182	Radio station, New	343	Schmitt, Emil	279	Stator	63
342	Moran, Robert E.	329	Parasites	41	Radioactive clean-up	12	Schmidt-Nielsen, Bodil	198	Staudinger, Hermann	307
200	Moreau, A. C.	361	Parks, Lloyd M.	311	Radioactive pills	248	Schmidt-Nielsen, Knut	198	Steam log carriage	184
148	Morejohn, G. Victor	41	Parrot fever	141	Radiocarbon	1, 10, 37	Schmitt, Charles L.	356	Steede, J. H.	165
111	Morgan, W. A.	217	Patents	105, 308, 410	Radios 91, 111, 112, 193,	196	Schmitt, O. H.	137	Steel, Plastic-Coated	256
272	Morgan, W. W.	150	Paternity, Test for	57	Radiumski, Jack L.	247	Schoeffel, M. F.	95	Steel-Wool holder	64
243	Morgan, William J.	36	Patte, Howard	42	Rae, R. W.	213	Schwab, Robert S.	295	Stefanini, Mario	277
24	Morrison, Peter R.	9	Pattie, Frank A.	191	Rain clothing	96, 320,	Schwan, Herman P.	14	Steigman, Alex J.	88, 173
277	Moseley, Alfred L.	191	Patton, Stuart	152	Rain making	125	Schwartz, Daniel S.	361	Stencil	208
143	Moseman, A. H.	21	Patrick, Ruth	324	Rajchman, Jan A.	101	Schwartz, Ferdinand F.	313	Stepladders, Steel	272
246	Moskowitz, Eugene	136	Pauling, Linus	394	Ramsey, F. K.	232	Schwerdt, Carleton E.	323	Stereovectorcardiograms	137
	Moth	113, 127	Paulsen, Carl G.	276	Rand, Austin L.	23	Schy, Albert A.	244	Sterility	56
	Mothballs	16	Payne, Howard M.	40	Rankin, J. J.	328	Science review	391	Sterilization	274
214	Motor, Midget	24	Pence talks	82	Rare earths	215	Science stories, Top	390	Sternberg, T. H.	201
324	Mt. Everest	136	Pearsall, W. H.	24	Rasmussen, Theodore	167	Science Talent Search	215	Stewart, I. McD. G.	133
200	Movie projector	352	Peebles, Fred N.	9	Rathman, B. G.	248	Scissor sharpener	104	Stewart, T. Dale	68
83	Muether, R. O.	287	Peking Man	374	Rating scales	345	Scott, J. P.	31	Stirling, Matthew W.	102
71	Muffler, Automobile	352	Penicillin	198, 278, 311,	Rats	126, 409	Screwdriver	412	Stockmal, Frank	357
72	Mulder, Donald	184	Pens	96	Ravin, Abe	20	Sea animals	46, 83,	Stollerman, Gene H.	291
280	Muller, William	372	Peri, William	53	Razor blade	256	Sea water freshening	270,	Stomach	118, 201
228	Multiple sclerosis	4, 184	Perrin, Samuel R.	402	Rea, R. L. Jr.	212	Seaborg, Glenn	335	Stone, M. W.	340
278	Munson, Charles S.	150	Personality judging	82	Reading pacer	400	Seaman, William B.	342	Stone Age infant	56
261	Murdoch, Joseph	313	Peters, Betty A.	366	Rear view mirror	57	Seaweed	179	Stoner, Richard D.	277
127	Murphy, Fat	40, 52	Peterson, Mendel L.	37	Reber, Grote	186	Selamographs	280	Stool	48
117	Murray, Thomas E.	284	Petroleum search	57	Reclamation Bureau	293	Selenium	88	Storage bag	48
293	Murray, William D.	344	Pets,	8, 62, 73,	Red-Tide	263	Seljakov, N.	143	Stoutmeyer, V. T.	229
244	Murthy, M. R. V.	280	Peterssen, Sverre	132	Reducing	52	Seli, H. S.	105	Straiton, A. W.	70
182	Muscles	198	Pewe, Troy L.	196	Reichelderfer, Francis W.	403	Sem-Jacobsen, Carl W.	313	Strategy	15, 401, 403
201	Muscular dystrophy	282	Pfaffenberger, C. J.	130	Reld, Allen F.	181	Semen banks	200	Street, One-Way	36
	Music, Significance of	73	Pfanstiel, Robert	44	Reld, Bobby L.	371	Senate Small Business	135	Stretcher	31
	Mustard gas	44, 136	Phelan, J. J.	147	Reitman, Hyatt	404	Committee	8	Strontium, Radioactive	25
341	Myer, Karl A.	185	Phelps, Earle Bernard	274	Rense, William A.	5	Severy, Derwyn	30, 39	Struckmeyer, B. Esther	233
216	Myers, Jack E.	201	Phillips, J. Neal, Jr.	201	Reptiles	57, 217, 265	Sex research aided	359	Struve, Otto	149
29	Myers, Raymond R.	185	Phillips, P. H.	82	Research	67, 82, 164,	Sexual behavior, Female	142	Stuart, F. E.	168
123	Myrvik, Quentin	217	Photocopying machine	336		313, 328, 388	Shallard, Bruce	119	Stuart, Neil W.	135
101			Photography	51, 134, 361	Research at NBS	79, 107	Shampoos	214	Sturkie, Paul D.	373
185			Photometer	150	Research funds	30, 68, 404	Shane, C. D.	118	Sturtz, William J.	200
216			Photoperiodism	106	Retirement activity	158	Shapley, Harlow	143,	Submarine, Atomic	257, 262
			Photosynthesis	179, 206, 406	Reynolds, S. R. M.	169, 388		151	Submarine, Toy	144
374	Nail, Virginia McKibben	143	Physical examination	105	Rheumatism	54	Sharks	293	Sugar	24
181	Nail	92	Piccone, Camilo	215	Rhododendron leaves	260	Sharp, Gordon	60	Suicides	8
216	Nailclipper	16	Pickett, Samuel	232	Rice, Leonard M.	287	Shaver, Battery-Powered	147,	Sulfa drugs	292
355	Names, Scientific	26	Pielmeier, John	375	Rice oil	23	Shavian, Joseph G.	206	Summer, Rules for	19
133	Namias, Jerome	213, 344	Pietenpol, W. B.	72, 296	Richter, Curt P.	82	Sheeting, Aluminum	137,	Sun	5, 141, 150, 153,
15	Nash, Al	263	Pill container	112	Riffkin, David	232	Shelter sign	376		168, 186, 376
256	Nason, Howard K.	169	Pillar, Rustless	215	Riggs, Lorrin A.	84	Sherman, J. K.	384	Sun glasses, Polarized	216
192	Natl. Acad. Sci.	6, 8, 339	Pillow	96, 176, 320	Ritchey, Hardin M.	5	Sherland pony	80	Sunflowers	142
345	Natl. Bu. Stds.	6, 7, 8,	Pillsbury, Donald M.	246	Ritchie, Jess M.	6	Shick, Wayne L.	292	Sunspot, New cycle	141
5		18, 30, 39, 79, 107,	Pilot's clothing	17, 23,	Roach, Arvid E.	158	Shilo, M.	297	Surgery	73, 134, 361
229	Natl. Inv. Coun.	262, 339, 358		31, 71	Robajdek, E. S.	82	Ships, Non-Magnetic	102	Sutcliffe, R. C.	196
104	Natl. Sci. Found.	294	Plitdown Man	350, 355,	Roberts, R. H.	235	Shock, Electric	295	Suter, C. M.	329
180	Naturalists, Mexican	103		374, 403	Robertson, E. Graeme	168	Shoer, Electric	123	Sutherland, James J.	111
190	Nausea	200	Pincus, Gregory	38	Robinson, H. M. Sr.	150	Shower stall	288	Swan, Henry	361
104	Navigation	329	Pine	190	Robinson, L. V.	312	Shrimp	199,	Swank, R. L.	4
359	Neel, J. V.	326	Pipe, Smoking	176	Robinson, R. C. V.	184	Shuman, R. D.	256	Swimming rules	40
39	Neel, J. W.	25	Pipes	112, 224,	Robitschek, P.	16, 405	Shuster, Carl N., Jr.	288	Switch, Giant	71
406	Nelson, Eric	88	Pistol, Helmet-Mounted	233	Robot devices	375	Shutz, Howard G.	345	Switch caps, Luminous	336
388	Nerve drugs	182	Pittenger, R. C.	291	Rocketry, Skills for	5, 152, 230	Siebert, C. A.	308	Synthetics, Chemistry of	307
328	Newcomer, Victor	134	Pituitary	149, 344, 376	Rockets	73	Silicon switch	281	Szybalski, W.	180
376	Newsprint	182	Planets	58, 103, 138,	Roemer, Elizabeth	16	Silkworms	350		
207	Nickel	199	Plant, Model of	200, 218, 266, 346,	Rogge, Genevieve	326	Sirianni, A. F.	274	TB	40, 116, 162,
5	Niiranen, John Victor	185	Plant diseases	185,	Roll cutter	184	Sitte, Kurt	185		174, 217, 409
15	Nobel prizes	275, 307		212, 249, 324	Roper, Val J.	279	Sivadjian, Joseph	281	TV	9, 15, 144, 192, 288,
230	Noodles	110	Plant exploration	40, 88, 330	Rose, H. A.	259	Skin grafts	43		327, 329, 401, 403
89	Norris, D.	312	Plant feeder	368	Rosenblatt, Frank	15, 370	Skin ills	248, 313,	Table	32
280	Norris, Dale M., Jr.	131	Plants	106, 189, 229,	Rosenthal, Daniel	156	Sleep	329, 377	Talcum	214
281	Note-Finder	48	Plastic binding	112	Rosen, flux	64	Slote, Lawrence	356,	Tamayo, Francisco	390
104	Nutmeg mill	272	Plastic modeling kits	272	Ross, Alan S. C.	345	Smith, David B.	118,	Tannehill, I. R.	360
375	Nystatin	134	Plastic repair patches	144	Ross, J. G.	107	Smith, F. G.	344	Tannenbaum, Albert	184
230			Plastics	107, 179, 184,	Ross, M.	133	Smith, Frank H.	373	Tarbell, Stanley	356
365			Play pen	160	Ross, Sherman	291	Smith, Loren B.	376	Tarbet, J. E.	201
541	Oak wilt	131, 189	Podesta, Charles D.	29	Ross, Sidney	328	Smith, Willie W.	297	Tarnower, Samuel M.	130
110	Oakley, K. P.	350, 374, 403	Polson	44	Rossmann, Fritz O.	118	Smithwick, Reginald H.	284	Tartar, Vance	340
328	Obesity	108, 265	Police siren	41	Rothenberg, Sanford F.	37, 200,	Snails	21	Taungs Baby	133, 374
80	Observatory, National	279	Polister, Barbara	5	Rubber	364	Sneath, P. H. A.	130	Taylor, A. B.	22
259	Ocean	25, 178	Pollock, H. E. D.	388	Rubber adhesive	320	Snell, Foster D.	55, 207	Taylor, A. R.	323
199	O'Connor, Basil	231,	Polunin, Nicholas	189	Rug, First-Aid for	144	Snodgrass, R. E.	183	Taylor, Craig	165
151		259, 338	Polyelectrolytes	211	Runway material	45	Soap	12	Technetium	376
356	Octopuses	40	Polymercorvo, Bruno	105	Rush, J. H.	168	Socket, Electric	29	Teeth	103, 227, 228,
294	Oden, Melita	178	Pool, M. L.	371	Rusk, Howard A.	195, 312	Socks, Electric	184, 240		247, 312, 371
387	Odor	135, 201	Population	263, 373	Russell, Louis L.	206	Spangenberg, H. D., Jr.	224	Telephone devices	208, 368
104	Ofelt, C. W.	43	Porcelain	310	Russian, Learning	344	Speeding, F. H.	224	Telescope	150, 151, 166
307	Oil	23, 104, 114, 360	Porpoise	154	Russian science	53, 115, 149	Speechless, Voice to	328	Teletypewriters	54
200	Oil well model	96	Potatoes	213, 312	Russo, Anthony L.	361	Spiegelman, Marvin	328	Tekes, Maria	342
56	Oils, Automobile	185,	Powell, J. E.	215	Rust remover	412	Spink, Wesley W.	409	Temperament, Tests of	170
406	Oldershaw, C. G. P.	280	Power plant	46, 97, 111,	Ryley, J. F.	179	Spleen	227, 246,	Tendons	30
330	Oligomycin	359	Pregnancies	165, 167, 169,			Spruth, Douglas H.	43	Termites	25, 47
214	Olsen, M. W.	229	Prejudices	160	Safe, Lock for	304	Spruth, H. C.	371	Tetracycline	232, 291
325	Oppenheimer, B. S.	197	Prison	202	Safety	160, 280,		215	Teuscher, George W.	227
186	Orange juice	350	Probe and drogue	173	Saffron	211		328	Teweles, Sidney, Jr.	213
44	Organs, Repairing	377	Production engineer	94	Salad server	256		323,	Thermal barrier	344
9	Orville, Howard T.	406	"Project Tinkertoy"	209, 211	Saldanha Man	355		71	Thermostat	320
387	Oswald, W. J.	247	Protein	394	Salk, Jonas E.	259		377	Thermostatos	174
	Outboard motor	192	Proton Beam, Polarized	9	Sampling device	69		160	Thomas, Miles	313
	Overlay material	240	Psychosomatic Medi-	377	Sand	228		169	Thomas, Richard	293
	Oxley, Charles L.	9	cine, Acad. of	185	Sandbag	368		269	Thompson, Hugh	377

Thye, Edward J.	7	UN	358	WHO	358	Well screen	336	Woodyard, John R.	310
Tibbles, J. I.	189	UNESCO	67	WIN drugs	329, 342	Wertheim, Gunther K.	183	Woolley, George W.	368
Ticho, Harold	195	Ulcers	24, 136, 244,	Wald, George	274, 313	Western Union	261	Woolsey, Robert Dean	266
Timer, Electric	272	Underkoffler, Leland A.	201	Walker, Stuart	291	Wetzel, Wilfred W.	246	Worms	41, 110,
Tire remover	128	Underwater murkiness	246	Walking stick	351	Weyer, Edward M. Jr.	117	Wounds, Covering for	313
Tishler, Max	38	Underwood, Felix Joel	274	Wall panels	320	Whales	60, 327,	Wrenn, Richard N.	314
Tobacco	40, 45, 57,	Unger, Albert Howard	72	Wallace, Arthur	283	Wheat	21, 281	Wright Flyer	314
	311, 312, 377,	Unger, Leon	72	Wallis, Barnes Neville	357	Whipple, Fred L.	86, 151,	Wu, Betty Y. T.	311
Tobacco mosaic	39, 197	Unger, Lester J.	57	Walton, Charles B.	244	White, Andrew J.	370		
Tolefson, H. B.	228	Upholstery, Plastic	112	Wang, Mark K. H.	341	White, G. D.	93		
Tongues, Sore	198	Uranium	61, 100	Warts	212	White, Paul D.	9, 43		
Tonsils	297			Washboard glove	352	Whitney, Elizabeth D.	358		
Tool kit	192			Wasp	44	Whittenberger, James J.	99	X-Rays	46, 136, 167,
Tornadoes	213, 328			Wastes, Using	55	Whooping cranes	365		185, 248, 259, 263,
Torpedoes	24			Water	53, 72, 276	Wiener, A. S.	406		340, 368, 371
Towboat	360	V-Particle	103	Water, Polluted	69, 324	Wildman, Samuel G.	40, 50		
Town, Model of	384	Vaccine, Making	50	Water repellent	80	Wiley, Alexander	294		
Toxemia	280	Vacuum cleaner	249	Waterlily	46	Williams, Clyde	72		
Toxoplasma	271	Van Allen, J. A.	89, 152	Watson, J. D.	387	Williams, F. X.	55	Yarns, Synthetic	128
Toxoplasmosis	130	van Bavel, C. H. M.	377	Weather	4, 28, 143,	Williams, George C.	73	Yeager, Charles E.	386, 409
Toys	32, 378	Van Cleave, Harley J.	41		165, 203, 213, 214,	Williams, J. H.	232	Yohalem, Stephen B.	411
Trace elements	137	Van Meter, J. Ray	262		216, 217, 264, 344, 360	Williams, Jonathan W.	136	Young, H. C.	334
Transistors	69, 91, 93	Van Scott, Eugene J.	246	Weather, Computing	196, 203, 309	Williams, Robley C.	178	Young, Norman H., Jr.	62
	193, 196, 245, 327, 373,	Vanden Heuvel, R. C.	338	Weather balloons	88	Wilson, Charles E.	30	Young, William C.	189
Treasure hunt	3	Vasopressin	243	Weather Bureau	403	Winans, Donald C.	228	Yuhl, Eric T.	134
Trees	359, 363, 366,	Veltman, Preston L.	100	Weather control	125, 406	Wind tunnels	198, 245		
Tribes, Culture of	233	Vibration detector	208	Weather ships	294, 341	Window trim	304		
Trichinosis	95	Viets, F. G., Jr.	410	Weatherstripping	368	Window washing bottle	256		
Trim, Iron-On	256	Virus	39, 50, 88, 116,	Weaver, Robert W.	233	Window weights	400	Zander, Helmut A.	227
Truck vibrations	79		173, 177, 178, 180, 197	Weedkillers	80, 363	Winter, H. F.	324	Zaumeyer, William J.	139
Trusler, G. A.	240	Visibility instruments	165	Weeks, Sinclair	8, 79,	Winter survival	318	Zelinsky, Wilbur	63
Tsao, Makepeace Uho	100	Vision	56, 84, 313, 326, 360	Weidenreich, Franz	148, 262, 339,	Witt, Frank	41	Zernike, F.	307
Tschirgi, Robert	168	Vitamins	249, 312, 361, 386	Weight indicator	283	Wohlschlag, Donald E.	189	Zetek, James	30
Tube squeezer	96	Vivian, H. E.	387	Weiner, J. S.	403	Wolf, F. A.	3	Zettlemoyer, Albert C.	125
Tugboat	390	Vogt, William H., Jr.	297	Weinkauff, Oliver J.	169	Wood finish	320	Zies, E. G.	290
Turkeys	141, 229, 326,	Volcano	296, 387	Weisskopf, Victor	135	Woods, Alan C.	271	Zimmerman, Elmer W.	911
Turtles	62	von Doenhoff, Albert E.	198	Welch, Henry	291	Woods, Ronald M.	271	Zirconium dioxide	136
Twins	168, 404	Vortex tube	183			Woodward, Robert B.	169	Zovickian, Anthony	328
Typewriters	384, 400					Woodworking tools	112	Zoeckler, Samuel J.	168

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63
307
20
105
290
311
136
328
163